

陽明交大資訊人

NYCU CCS MAGAZINE



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邁向全球卓越，打造資訊學院的新篇章

謝續平教授接掌資訊學院院長，領航學院邁向新里程

自 2025 年 8 月 1 日起，我很榮幸接任陽明交通大學資訊學院院長，承擔延續本院卓越傳統、推動下一階段培育人才的任務。今年，學校於國際排名屢創佳績：在 QS 2026 世界大學排名中首次挺進全球前 199 名；在 THE 2025 世界大學影響力排名中名列全球第 41 名，創下歷史新高；在 QS 2025 「資料科學與 AI」領域更躍升至全球第 92 名，顯示我院在人工智慧與資訊領域的研究成果已深獲國際重視。

本院師生於過去一年展現高度能量與卓越表現，成果斐然。在教師榮譽方面，陳志成教授獲頒國家科學及技術委員會 114 年度傑出特約研究員，曾新穆教授榮獲第三十二屆東元獎，邱維辰教授榮獲「十大傑出青年」；由莊仁輝、彭文孝、王昱舜、彭文志與曾新穆教授領軍之研究團隊，榮獲「2025 未來科技獎」；曾意儒教授獲頒「113 學年度傑出教學獎」。此外，陳昱芝與王邦任老師榮獲校長青年講座，張庭榕老師獲頒盧豐裕學長之青年講座獎勵計畫。本人亦榮獲 IEEE Life Fellow 及 IEEE《Transactions on Reliability》總編輯傑出貢獻獎。在學生表現方面，由謝旻錚教授指導之官靈軒、歐育淇與范釗維同學，於 2025 年 ICPC 亞太賽勇奪銅牌並晉級世界總決賽，成果令人振奮。

展望未來，我將以“Establishing Our Unique Identity Towards Global Excellence”為願景，引領資訊學院建立清晰的全球定位，讓「人才搶進、企業搶聘」成為本院特色。

企業講座挹注學術發展

今年度承蒙博梭智能科技與禾薪科技慷慨支持，本院分別設立「博梭智能講座」及「Saviah 科技講座」。其中，李毅郎教授與謝秉均教授榮獲「博梭智能講座」，陳健教授則獲頒「Saviah 科技講座」殊榮。本院期盼透過企業的持續參與與支持，激勵優秀師資深耕教學與研究，共同培

育下一代科技領袖。這股產學力量，也轉化為學院空間建設與長期發展的重要動能。

華仁館募款：攜手開創資訊學院下一個十年

今年，資訊學院迎來一項深具意義的重要進展——「華仁館（資訊二館）」正式啟動興建。這項成果源於林憲銘學長對母校深厚情感的回饋，也凝聚了歷任院長、學院團隊、學校行政體系，以及眾多夥伴長時間的共同努力與支持。華仁館以其父母之名命名，象徵「飲水思源」的精神，更承載著對教育與學術永續發展的深切期許。同時，也要特別感謝在華仁館募建過程中給予支持的其他捐助者，包括邱繼弘系學會會長、盧豐裕學長、蔡祈岩學長、陳尚仁學長、范紀鏗學長、馮彥文學長、蔡昌裕學長、余孝先學長、李益青學長、李奇育教授、洪俊隆學長、李躍欽學長、亞美陞揚科技等多位系友，慷慨襄助，銘感五內。各位的心意與付出，未來都將銘刻於新建築之中，並體現在大樓內外的規劃與設計。學院亦將持續推動捐款計畫，每一份心意都是對教育與人才培育的重要支持，我們謹致上最誠摯的感謝。

同時，因應智慧醫療發展趨勢，本院與醫學院攜手規劃設立「人工智慧與醫學計算研究所」，培養人工智慧專長之跨域人才，推動智慧醫療創新。該設所計畫已於今年校務會議通過，預計於 2026 年起招生。

在此，謹向所有在這段歷程中付出心力的師生、同仁與校友，致上最誠摯的感謝。期待在大家持續攜手下，資訊學院得以穩健累積能量，拓展跨域合作，為下一個十年奠定更堅實的基礎，共同邁向具深遠國際影響力、引領趨勢的未來。

資訊學院院長

謝續平

2025.12

Striving for Global Excellence:
Forging a New Chapter for CCSProfessor Shihpyng Shieh Assumes
Deanship, Leading the College Toward a New
Milestone

Since August 1, 2025, I have had the distinct honor of serving as the Dean of the College of Computer Science at National Yang Ming Chiao Tung University (NYCU). I accept the responsibility of continuing our college's tradition of excellence while spearheading the next phase of our mission in talent cultivation. This year, our university has achieved remarkable success in global rankings: breaking into the top 199 in the QS World University Rankings 2026; reaching a historic high of 41st globally in the THE 2025 University Impact Rankings; and climbing to 92nd in the world for "Data Science & AI" in the QS 2025 Rankings. These milestones reflect the international recognition of our college's research in AI and information technology.

The past year has been a testament to the immense energy and outstanding performance of our faculty and students. In terms of faculty honors:

- Prof. Jyh-Cheng Chen was honored as a 2025 Distinguished Research Fellow by the National Science and Technology Council (NSTC).
- Prof. Vincent S. Tseng received the 32nd TECO Award.
- Prof. Wei-Chen Chiu was selected as one of the "Ten Outstanding Young Persons."
- A research team led by Professors Jen-Hui Chuang, Wen-Hsiao Peng, Yu-Shuen Wang, Wen-Chih Peng, and Vincent S. Tseng won the "2025 Future Tech Award."
- Prof. Yi-Ju Tseng was presented with the "2024 Distinguished Teaching Award."

Furthermore, Prof. Yu-Chih Chen and Prof. Dennis Wang, were appointed as Presidential Youth Chairs; Prof. Ting-Jung Chang received the Mike Lu Alumnus Youth Chair Award. I am also humbled to have been named an IEEE Life Fellow and to receive the Distinguished Contribution Award as Editor-in-Chief of IEEE Transactions on Reliability. Regarding student achievements, a team comprising Ting-Shiuan Guan, Yu-Chi Ou, and Jhao-Wei Fan, guided by Prof. Min-Zheng Shieh, won a bronze medal at the 2025 ICPC Asia-Pacific Championship and advanced to the World Finals—a truly inspiring result.

Looking ahead, my vision is "Establishing Our Unique Identity Towards Global Excellence." I aim to lead the college in defining a clear global position, ensuring that "top talent seeks entry, and top enterprises seek to hire" becomes our hallmark.

Industrial Chairs Fueling Academic
Development

This year, with the generous support of Pulsaris AI and Saviah Technologies, the College has established the "Pulsaris AI Chair" and the "Saviah Chair". Specifically,

Prof. Yih-Lang Li and Prof. Ping-Chun Hsieh were honored with the Pulsaris AI Chair, while Prof. Chien Chen received the Saviah Chair. Through the continued involvement and support of the industry, we aim to inspire our exceptional faculty to further their dedication to teaching and research, jointly cultivating the next generation of tech leaders. This synergy between academia and industry has also become a vital driving force for the College's infrastructure and long-term development.

HuaJen Hall Fundraising: Co-creating the Next
Decade

This year marks a significant milestone with the official launch of "HuaJen Hall (Computer Science Building II)." This achievement stems from the deep-rooted gratitude of alumnus Simon Lin and the collective efforts of past deans, faculty, staff, and partners. Named after the donor's parents, HuaJen Hall symbolizes the spirit of "remembering one's roots" and carries a profound commitment to the sustainable development of education and academia.

I would also like to express my deepest gratitude to other donors who have supported the fundraising and construction of HuaJen Hall, including Alumni Association President Nathan Chiu, and alumni Mike Lu, Rock Tsai, Sunny Chen, Paul Fan, Yenwen Feng, Eric Tsa, Shiao-Shian Yu, Lee, Yi-Ching, Prof. Chi-Yu Li, Chun-lung Hung, Li, Yue-Qin, and Ambiq Micro, for their generous contributions. Your devotion will be engraved in the new building and reflected in its design. Moving forward, the College will continue to promote fundraising initiatives; every contribution represents a vital commitment to education and talent cultivation. We extend our most sincere thanks to all our supporters.

Additionally, in response to trends in smart healthcare, our college has collaborated with the College of Medicine to establish the "Institute of Artificial Intelligence and Medical Computing." This institute aims to train interdisciplinary talent with AI expertise. The proposal was approved by the University Council this year, and student recruitment is scheduled to begin in 2026.

I would like to extend my most sincere gratitude to all faculty, students, staff, and alumni who have contributed to this journey. I look forward to our continued collaboration as we steadily build momentum, expand cross-disciplinary cooperation, and lay a stronger foundation for the next decade, moving together toward a future of far-reaching global impact and trend-setting leadership.

Shihpyng Shieh

Dean of the College of Computer Science

2025.12

林憲銘學長捐建華仁館， 為 AI 前瞻科技與人才培育奠基

文／林珮雯

國立陽明交通大學於 114 年 11 月 28 日舉行「華仁館」（資訊二館）捐建簽約儀式，由林奇宏校長與校友、緯創資通董事長林憲銘（Simon Lin）學長共同主持，在緯創三位高階主管、三位副校長及資訊學院多位代表見證下，正式完成簽署。林憲銘學長個人無償捐建整棟大樓，創下陽明交大創校以來首度由個人獨資捐建完整校舍的重要紀錄。

「華仁館」以林憲銘學長父母之名命名，象徵其飲水思源、回饋母校的深厚情誼。簽約當日，林學長難掩激動之情，為資訊學院發展寫下重要里程碑。

本案源於資訊學院長期面臨空間不足的挑戰。在陳志成前院長率領學院團隊積極奔走與募款下，獲得林憲銘學長大力支持，並因應公部門規範，最終採取「先建後捐」模式推動。校方行

政團隊亦全程協助，在校長與多位副校長支持下，黃世昌總務長及相關單位通力合作，於校園核心位置覓得緊鄰既有系館的理想基地。

此外，緯創團隊提供專業協助，從整體興建策略、科技應用到建築規劃，為計畫注入關鍵專業能量；建築設計則由國內外知名建築師黃聲遠操刀，秉持「不砍樹、與自然共生」的理念，打造融合人文、科技與永續精神的學習空間。

資訊學院院長謝續平表示，誠摯感謝林憲銘學長慷慨捐建，以及校方行政團隊、緯創團隊與所有參與同仁的共同努力，促成這項深具指標意義的計畫。他也期盼，未來的「華仁館」能在全院師生持續投入下，成為「人才搶進、企業搶聘」的創新搖籃與人才樞紐，為陽明交大培育更多引領未來的關鍵人才。



「華仁館」建簽約儀式（緯創資通提供）

Alumnus Simon Lin Donates Construction of HuaJen Hall to Lay the Foundation for AI Innovation and Talent Development

National Yang Ming Chiao Tung University (NYCU) held a signing ceremony on November 28, 2025, for the donation of HuaJen Hall, the second building of the College of Computer Science. The ceremony was jointly presided over by the University President Chi-Hung Lin and alumnus Simon Lin, Chairman of Wistron Corporation, and was witnessed by three senior executives from Wistron, three vice presidents of NYCU, and representatives from the College of Computer Science.

Simon Lin will personally and unconditionally fund the construction of the entire building, marking the first time in NYCU's history that a complete campus building has been independently financed by a single individual donor.

HuaJen Hall is named in honor of Lin's parents, symbolizing his gratitude and commitment to giving back to his alma mater. Visibly moved during the ceremony, Lin marked the occasion as a significant milestone in the development of the College of Computer Science.

The project originated from the College of Computer Science's long-standing shortage of space. Under the leadership of former Dean Jyh-Cheng Chen, the college actively pursued fundraising efforts and received strong support from Lin. In response to public-sector regulations, the project adopted a build-first, donate-later model. Throughout the process, the University's administrative team provided full support. With leadership from the President and coordination among multiple vice presidents, Dean of General Affairs S.C.Huang, and administrative

offices, an ideal site was secured at the heart of the campus, adjacent to existing department buildings.

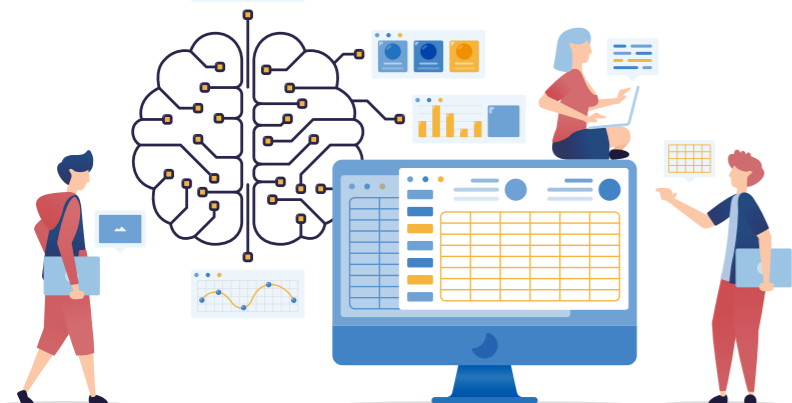
The Wistron team also contributed professional expertise, offering strategic guidance on construction planning, technology integration, and architectural feasibility. The building is designed by renowned architect Sheng-Yuan Huang, who embraced a philosophy of coexistence with nature by preserving existing trees, framing natural views, and creating a learning environment that harmonizes with its surroundings.

Dean Shihpyng Shieh of the College of Computer Science expressed sincere gratitude to Simon Lin for his generous donation, as well as to the University's administrative team, the Wistron team, and all faculty and staff who contributed to the realization of this landmark project. He noted that, with the collective efforts of faculty and students, HuaJen Hall is expected to become an innovation cradle and talent hub—attracting outstanding students and drawing strong interest from industry partners—while further strengthening NYCU's role in cultivating future leaders in information and computing disciplines.

Upon completion, HuaJen Hall will serve as a major center for teaching and research within the College of Information, fostering innovation, enhancing industry-academia collaboration, and supporting NYCU's continued pursuit of global academic excellence.

資工特色課程：邊緣人工智慧 (Edge AI)

打造 AI 模型高效化的下一代人才 文／杜懿洵



自 112 下學期年以來，「邊緣人工智慧 (Edge AI)」課程已開設兩年，課名中的「邊緣」乍聽幽默，卻意涵深遠；無論是解釋成「邊緣人」工作的智慧、「邊緣人工」智慧，或「邊緣的」人工智慧，都指向同一核心理念：AI 正快速從雲端走向終端，追求更高效率、更低能耗與更即時的地運算。

「邊緣人工智慧」課程由長期專注於模型壓縮、系統優化與 AI 加速技術的吳凱強教授規劃。從早期的卷積神經網路 (CNNs) 到最新的 Transformers 與 Mamba 架構，吳教授在研究中逐步體悟：AI 模型強不稀奇，真正的挑戰在於如何讓模型跑得好、跑得快、又省資源。正是這樣的觀察，促使他將實驗室多年研究的成果轉化為課程內容，讓不想再反覆調參建模的資工系學生，也能在 AI 的「高效化」領域找到另一條研究之路。

邊緣人工智慧的重要性

隨著 AI 的去中心化發展，邊緣人工智慧逐漸成為新趨勢。邊緣 AI 因由終端裝置獨立運作，不依賴雲端伺服器，也不需上傳敏感資料，具有高隱私性、低網路需求以及降低對資料中心依賴的優勢。然而，終端裝置通常運算能力有限、記憶體不足，甚至可能僅依靠電池供電，因此，軟體必須小巧精準，硬體要快速省電，而這也是「邊緣人工智慧」課程設計的核心理念。

吳教授實驗室一方面投入客製化 AI 加速器的研究，另一方面深入探索各類模型壓縮與優化技術，包括剪枝 (pruning)、量化 (quantization)、資料切塊 (tiling)、推測解碼 (speculative decoding) 等，透過軟硬體並進的研究策略，團隊成功讓原本龐大的模型能在「小型」加速器上依然保持高效運行，多項研究成果在 2025 年被頂尖會議如 ICLR、ICML、EMNLP、NeurIPS 收錄，展現 AI 高效化與跨層次整合的能量。

課程內容與特色：深度實作 × 前沿研究：打造最強 Edge AI 課程

邊緣 AI 課程的內容涵蓋多元技術，包括模型壓縮 (剪枝、半結構稀疏)、量化 (Post-training / Quantization-aware)、TinyML、AI 加速器 (通用與專用 ASIC)、神經網路架構搜尋 (NAS)、知識蒸餾、LoRA/DoRA 微調、新式 LLM 架構探索，以及分散式訓練等；課程強調「高效率」，不僅教授理論，更著重實作操作，使學生能理解如何讓模型跑得好、跑得快又省資源，並激發進一步研究的興趣。

此外，課程還特別邀請業界與學界專家客座授課，包括：Skymizer 謝政道博士分享 TinyML；陽明交通大學黃俊達教授講解 AI 加速器；美國德州大學江泓樂博士介紹 Mamba 的量化研究 (Quamba)；以及 vLLM 開發者之一俞浩博士講解推測解碼 (speculative decoding) 相關技術。這些實務經驗與最新研究成果，讓學生能夠直接接觸前沿技術，拓展視野。

修課學生熱烈回響：兩年內修課人數倍增

根據學生回饋，「邊緣人工智慧」課程不僅內容充實、實作挑戰性高，操作過程更富有成就感，除了深化對 AI 模型運作與微調原理的理解，一位醫學系的修課學生表示，課程也能讓非資工背景的學生接觸到業界與學界最新的 Edge AI 技術和發展。此外，也有學生表示，課程理論與實作並重的設計，使他們在動手操作中能真正掌握前沿技術，對於未來投入研究與進入產業應用，都具備高度實用性與啟發性。

短短兩年間，「邊緣人工智慧」課程修課人數從首屆的 70 - 80 人，增至第二屆近 160 人，迅速成為系上最受關注的特色課程之一，充分展現學生對 Edge AI 與模型高效化技術的濃厚興趣與熱情。課程不僅培養了 AI 高效化的實務能力，更為學生打開了未來研究與職涯的多元可能性。

Featured CS Course: Edge Artificial Intelligence (Edge AI) Training the Next Generation of Experts in AI Efficiency

Since its launch in the second semester of Academic Year 2023, Edge Artificial Intelligence (Edge AI) has been offered for two consecutive years. Although the word "edge" in the course title may sound humorous at first—whether one interprets it as the "wisdom of marginal people," "marginal artificial intelligence," or simply "AI on the edge"—the concept behind it is both precise and profound: AI is rapidly shifting from the cloud to end devices, pursuing higher efficiency, lower power consumption, and real-time on-device computation.

The course is designed by Professor Kai-Chiang Wu, whose long-term research focuses on model compression, system optimization, and AI acceleration. From early convolutional neural networks (CNNs) to the latest Transformer and Mamba architectures, Professor Wu has gradually realized through years of research that having a powerful model is not the hard part—the real challenge lies in making it run well, run fast, and run efficiently. This insight inspired him to transform his research achievements into a course that offers an alternative research direction for CS students who are tired of repetitive model tuning and training but still wish to dive into the world of AI through efficiency-driven innovation.

The Importance of Edge AI

As AI becomes increasingly decentralized, Edge AI is emerging as a major technological trend. Because edge devices operate independently without relying on cloud servers—and without uploading sensitive data—they naturally provide advantages such as enhanced privacy, reduced network reliance, and decreased dependence on large data centers.

However, end devices face significant constraints: limited compute power, insufficient memory, and often only battery-level energy availability. This means software must be lightweight and precise, while hardware must be fast and energy-efficient—principles that lie at the core of the Edge AI course.

Professor Wu's lab simultaneously conducts research on customized AI accelerators and investigates a wide range of model compression and optimization techniques, including pruning, quantization, data tiling, and speculative decoding. With a co-design approach spanning both hardware and software, his team has successfully enabled large models to run efficiently on small accelerators. Multiple research results were accepted to top-tier conferences in 2025, including ICLR, ICML, EMNLP, and NeurIPS, showcasing the team's strong capabilities in AI efficiency and cross-layer integration.

Course Content and Highlights:

Hands-on Depth × Cutting-edge Research = The Ultimate Edge AI Course

The course covers a wide spectrum of technologies, including model compression (pruning and semi-structured sparsity), quantization (post-training and QAT), TinyML, AI accelerators (general-purpose and ASIC), neural architecture search (NAS), knowledge distillation, LoRA/DoRA fine-tuning, exploration of new LLM architectures, and distributed training.

Emphasizing efficiency, the course goes beyond theory by incorporating extensive hands-on practice to help students learn how to make models run better, faster, and with fewer resources—while also sparking further research interest.

In addition, the course features guest lectures from leading experts across industry and academia, including:

- Dr. Cheng-Tao Hsieh (Skymizer) — TinyML
- Prof. Juinn-Dar Huang (NYCU) — AI accelerators
- Dr. Hung-Yueh Chiang (University of Texas at Austin) — Mamba quantization (Quamba)
- Dr. Hao Yu (OpenAI) — FlashAttention and PagedAttention

These lectures expose students directly to state-of-the-art techniques and real-world applications, significantly broadening their perspectives.

Strong Student Response: Enrollment Doubled in Two Years

According to student feedback, the Edge AI course offers rich content and challenging hands-on assignments, making the learning experience highly rewarding. Students report that the course not only deepens their understanding of model mechanics and fine-tuning principles but also gives non-CS students valuable access to the latest developments in Edge AI across academia and industry—including one medical student who noted how inclusive and impactful the course was.

Others highlight that the course's balance of theory and practice allows them to master cutting-edge techniques through actual implementation, providing significant benefits whether they choose to pursue research or enter the tech industry.

In just two years, enrollment in Edge Artificial Intelligence has grown from 70–80 students in its debut year to nearly 160 students in the second year. The course has quickly become one of the most anticipated and well-regarded offerings in the department, demonstrating students' strong interest and enthusiasm for Edge AI and model efficiency technologies.

Beyond equipping students with practical skills in AI optimization, the course opens new pathways for future research and career development.

洪瑞鴻教授研究團隊 打造虛擬表觀基因體系統 EpiVerse

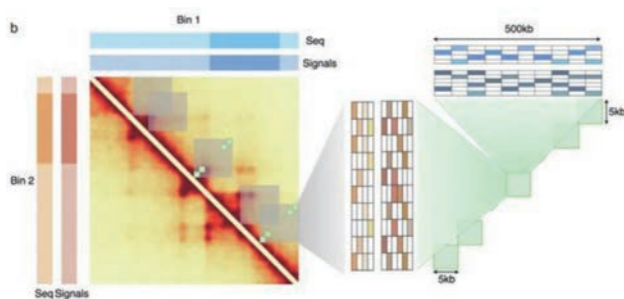
文／洪瑞鴻教授、公關組



研究團隊合影。

想像 DNA 是一條長達兩公尺的毛線，卻被精密地摺疊收納進直徑僅約 5 至 10 微米的細胞核中，形成複雜的「毛線球」宇宙。陽明交大資訊工程學系研究團隊運用 AI 技術，開發出名為 EpiVerse 的研究工具，協助科學家以全新方式探索這個隱藏於細胞核中的微觀結構。相關成果已發表於頂尖期刊《Nature Communications》。

EpiVerse 展現 AI 在生命科學應用的強大潛力，特別是在藥物開發與基因調控建模等方面，正逐漸重塑過去依賴大量實驗的研究模式。EpiVerse 名稱中的「Epi」取自表觀基因體 (Epigenome)，代表在 DNA 序列之外調控基因表達的化學修飾與染色質構型；「Verse」則源自元宇宙 (Metaverse)，象徵透過 AI 創建的虛擬表觀基因體空間 (Virtual Epigenome)。

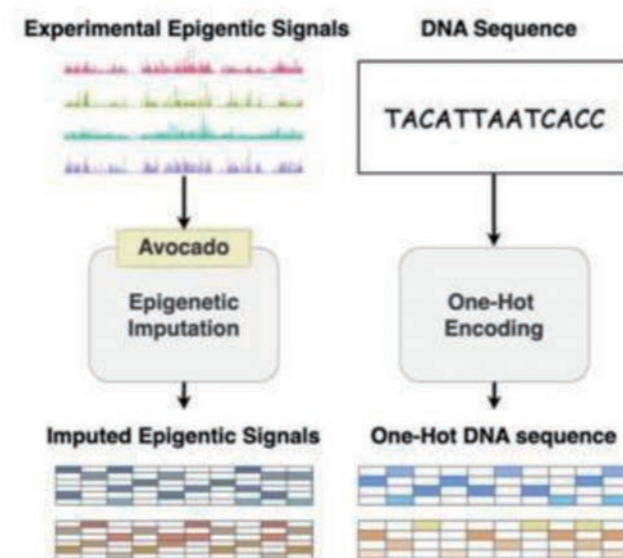


本研究所設計用於捕捉超長距離交互作用並預測染色質構型的模型架構。

「過去研究染色質結構仰賴繁複且成本高昂的實驗流程。我們實驗室多年來嘗試各類 AI 模

型進行預測。」 EpiVerse 計畫主持人、資工系洪瑞鴻教授表示。「透過精心設計的模型架構，我們得以模擬染色質在不同細胞狀態下的三維構型。EpiVerse 所建構出的虛擬表觀基因體，能協助研究人員理解基因調控機制，為癌症研究、藥物開發與個人化醫療開拓新的分析途徑。」

EpiVerse 採用多階段深度學習與虛擬表觀基因體建構技術，具備跨細胞類型的預測能力，能在實驗資料稀缺的情況下模擬不同組織的染色質結構，拓展基因調控研究的適用範圍。研究團隊在系統架構中首創結合高階轉換器 (HiConformer) 多任務學習與多尺度影像重建網路 (MIRNet) 技術，大幅提升了模型的預測精度與視覺化品質。



利用機器學習模型將稀缺不完整的基因資料復原成完整的高維度表示。

EpiVerse 的另一個突破性的功能是能夠預測細胞在不同狀態、環境、藥物處理、突變或癌化轉移時染色質結構可能的變化，進行大規模電腦模擬擾動實驗 (in silico perturbation experiments)，協助研究者推演特定基因的調控網絡與可能干預機制。這一功能為理解染色質構型動態、基因調控機制與疾病、藥物之關聯，提供前所未有的系統化分析途徑。

「以往一組實驗可能需要耗費數月時間與上

百萬元經費，且幾無試錯空間。EpiVerse 的模擬能力讓研究人員得以快速進行多次擾動實驗，提供後續實驗設計的重要線索，大幅提升研究效率，正是 AI 算力革命在生命科學中實質應用的體現。」

洪瑞鴻也表示。EpiVerse 的程式碼與模型已全面開源，提供全球研究者在表觀基因體與染色質結構分析上的嶄新工具與研究範式。此成果由洪瑞鴻教授與兩位數據科學研究所碩士生羅宇呈、林明佑共同完成，展現陽明交大在跨領域 AI 與生物資訊人才培育上的堅實實力。



AI 解密細胞核毛線球宇宙是意圖 (AI 製作)

Professor Jui-Hung Hung's Research Team Building the Virtual Epigenome System — EpiVerse

Imagine a DNA strand stretching two meters long, yet intricately folded and packed into a cell nucleus only about 5 to 10 micrometers in diameter—forming a complex "ball of yarn" universe. A research team from the Department of Computer Science at National Yang Ming Chiao Tung University has harnessed artificial intelligence to develop a system called EpiVerse, a novel tool that allows scientists to explore this hidden microcosm within the nucleus in unprecedented ways. Their work has been published in the prestigious journal Nature Communications.

EpiVerse showcases the immense potential of AI in life sciences, particularly in drug discovery and gene regulation modeling. It is reshaping traditional research paradigms that once depended heavily on laborious and costly experiments.

The name "EpiVerse" combines "Epi" from epigenome—which refers to the chemical modifications and chromatin configurations that regulate gene expression beyond the DNA sequence—and "Verse" from metaverse, symbolizing a virtual epigenomic universe created through AI.

"Traditional studies of chromatin structure relied on complex and expensive experimental procedures. Over the years, our lab has tested various AI models for prediction," said Professor Jui-Hung Hung, the principal investigator of the EpiVerse project.

"Through a carefully designed model architecture, we can now simulate the 3D chromatin structure under different cellular states. The virtual epigenome built by EpiVerse helps researchers better understand gene regulatory mechanisms, opening new analytical pathways for cancer research, drug development, and personalized medicine."

EpiVerse employs multi-stage deep learning and virtual epigenome construction techniques, enabling cross-cell-type prediction. Even when experimental data are limited, EpiVerse can model chromatin structures across different tissues, expanding the

scope of gene regulation research.

The team pioneered an architecture that integrates HiConformer, a multi-task transformer model, with a multi-scale image reconstruction network (MIRNet), greatly enhancing both predictive accuracy and visualization quality.

Another breakthrough feature of EpiVerse is its ability to predict potential chromatin structural changes under varying conditions—such as cellular states, environments, drug treatments, mutations, or cancer metastasis. It enables large-scale in silico perturbation experiments, allowing researchers to simulate and infer gene regulatory networks and potential intervention mechanisms.

This capability provides an unprecedented, systematic approach to understanding the dynamics of chromatin organization, gene regulation, and their relationships to diseases and therapeutics.

"Previously, a single experiment might take months and cost millions, with little room for trial and error. With EpiVerse's simulation power, researchers can now perform multiple perturbation experiments rapidly, obtaining crucial insights for experimental design and vastly improving research efficiency. This represents a tangible realization of AI's computational revolution in the life sciences," said Professor Hung.

Professor Hung also noted that EpiVerse's source code and model are fully open-sourced, providing the global scientific community with a powerful new tool and paradigm for epigenome and chromatin structure analysis.

The project was jointly completed by Professor Hung and two master's students from the Institute of Data Science and Engineering, Yu-Cheng Lo and Ming-Yu Lin, demonstrating NYCU's strong interdisciplinary expertise in AI and bioinformatics talent development.

跨領域研究團隊開發 「高效分散式推進垂直起降無人機」技術 打造智慧飛行新高度

文／杜懿洵



左起為彭文孝教授、程登湖教授、賴錦文教授、莊仁輝教授。

由國立陽明交通大學資訊工程學系莊仁輝教授領軍，加上賴錦文教授、程登湖教授及彭文孝教授所組成的跨領域研究團隊，以「高效分散式電動推進垂直起降無人機技術」脫穎而出，榮獲2025年度「未來科技獎」。本技術為科技部「韌性家園—以智慧無人機建構之智慧安全環境與防災系統」計畫的核心成果，不僅提升無人機的續航力與穩定性，更為城市空中交通（UAM）與防災應用開啟全新可能。

打破傳統設計框架 以創新推進技術提升飛行效率

團隊突破傳統垂直起降（VTOL）無人機需配置兩套推進系統的設計限制，提出「分散式電動推進（DEP）」架構。系統結合可變向螺旋槳模組與伺服控制機構，使單一平台即可執行起飛、懸停、轉場與高速巡航等多模式飛行，大幅減輕結構重量、降低阻力並提升能源效率。此創新展現出我國在高階空氣動力控制上的自主研发能力。

在風洞實驗與數值模擬中，分散式螺旋槳產生的尾流能導引氣流緊貼主翼表面，延遲邊界層分離並抑制失速，升力係數提升逾三倍。團隊更透過優化螺旋槳尺寸與配置，改善升阻比與流場均勻性；翼尖反旋設計則削弱渦流、減少誘導阻力，使整體飛行更穩定且節能。

AI 智慧控制 讓無人機更聰明、更安全

除結構創新外，團隊導入AI感測與決策系統，使無人機具備即時環境感知與自主飛行能力。系統可依氣流變化與任務需求，動態調整推力方向與轉速分布，保持穩定飛行姿態，特別適用於突發氣候或複雜地形。智慧化控制讓無人機能於災害現場或都市低空環境執行高風險任務，

兼顧安全與效率。

模組化設計亦是一大特色。每個推進模組可獨立控制與快速維修，能依任務載重靈活調整配置，具高度擴充性與跨平台整合潛力。全電動驅動結構更具低噪音、零排放、維護簡便等優勢，呼應全球淨零與綠色航空發展方向。

多場域應用 從智慧城市到防災救援

此項技術擁有高續航力、高穩定性與多模式操控優勢，能廣泛應用於城市空中交通、防災救援及能源巡檢等場域。

在城市空中交通（UAM）中，可作為短程接駁、空中計程車與低空物流的核心載具，兼具低噪音與高安全特性；於災害應變作業中，系統可自主識別任務需求，快速部署於交通中斷或地形艱難區域，執行空拍、運輸與通訊任務。此外，此技術亦能支援智慧農業與能源設施巡檢，搭載感測器與AI邊緣運算模組，進行農地監測、作物分析、風場與電塔巡檢，甚至於偏遠地區與國防監控任務中，也能結合GPS與視覺導航，實現高效率巡防與物資運輸，展現我國自主防災科技的應用潛力。

專利創新 確立自主研發技術優勢

此技術已於2025年7月獲智慧財產局核發發明專利（證書號：TWI890115B），專利名稱為「定翼型無人機及其螺旋槳組件」。系統以伺服馬達驅動桿件機構，軸向旋轉調整螺旋槳方向，依據不同飛行模式自動改變推力向量。螺旋槳模組分布於機翼前緣，可依氣流狀態即時微調角度，兼具節能與穩定效益。這項創新結構突破固定翼無人機在垂直起降與轉場飛行的限制，奠定團隊「分散式電動推進」系統的核心基礎。

跨領域整合 打造次世代智慧飛行平台

本團隊結合資訊工程、機械設計、控制系統與人工智慧等多重專業，展現陽明交大在跨領域創新的研發實力。團隊的核心理念是「以智慧推進綠色航空未來」，希望藉由創新的分散式推進與AI決策系統，為新世代空中交通與防災應用建立可落地的技術平台。

從科研到實踐 開啟綠色航空新篇章

榮獲「未來科技獎」不僅肯定陽明交大在智慧航空與人工智慧應用上的研發成果，也象徵校內科研能量逐步邁向實際應用與國際接軌。該技術以高效率、低碳排與高機動性兼具的特性，為次世代智慧空中運輸提供關鍵技術方案，預期未來將在城市交通、防災救援、能源監測與永續發展等多元領域發揮深遠影響。

Cross-Disciplinary Research Team Develops "High-Efficiency Distributed Propulsion VTOL UAV" Technology

Creating New Heights in Smart Flight

A cross-disciplinary research team led by Professor Jen-Hui Chuang of the Department of Computer Science at National Yang Ming Chiao Tung University (NYCU), along with Professors Lua Kim Boon, Teng-Hu Cheng, and Wen-Hsiao Peng, won the 2025 "Future Tech Award" for their "High-Efficiency Distributed Electric Propulsion Vertical Takeoff and Landing (VTOL) UAV Technology." This technology is a core output of the Ministry of Science and Technology's "Resilient Homeland – Smart Safety Environment and Disaster Prevention System Constructed with Smart UAVs" project. It not only enhances the UAV's endurance and stability but also opens up new possibilities for Urban Air Mobility (UAM) and disaster response applications.

Breaking Traditional Design Frameworks: Innovative Propulsion Technology Enhances Flight Efficiency

The team broke through the design limitation of traditional Vertical Takeoff and Landing (VTOL) UAVs, which require two separate propulsion systems, by proposing a "Distributed Electric Propulsion (DEP)" architecture. The system combines controllable pitch propeller modules with a servo control mechanism, enabling a single platform to perform multi-mode flight, including takeoff, hovering, transition, and high-speed cruising. This significantly reduces structural weight, lowers drag, and improves energy efficiency. This innovation demonstrates Taiwan's independent R&D capabilities in high-level aerodynamic control.

In wind tunnel experiments and numerical simulations, the wake generated by the distributed propellers guides the airflow to closely adhere to the main wing surface, delaying boundary layer separation and suppressing stall, resulting in a more than three-fold increase in the lift coefficient. The team further optimized propeller size and configuration to improve the lift-to-drag ratio and flow field uniformity. The counter-rotating wingtip design weakens vortices and reduces induced drag, making the overall flight more stable and energy-efficient.

AI Smart Control: Making UAVs Smarter and Safer

In addition to structural innovation, the team incorporated an AI sensing and decision-making system, enabling the UAV to possess real-time environmental awareness and autonomous flight capabilities. The system can dynamically adjust the thrust direction and rotational speed distribution based on airflow changes and mission requirements to maintain a stable flight attitude, making it particularly suitable for sudden weather changes or complex terrain. Intelligent control allows the UAV to perform high-risk tasks in disaster sites or low-altitude urban environments, balancing safety and efficiency.

Modular design is another key feature. Each propulsion module can be independently controlled and quickly maintained, allowing for flexible configuration adjustments based on mission payload, giving it high expandability and cross-platform integration potential. The all-electric drive structure also boasts advantages such as low noise, zero emissions, and simple maintenance, aligning with global net-zero and green aviation development trends.

Multi-Domain Applications: From Smart Cities to Disaster Relief

This technology, with its advantages of high endurance, high stability, and multi-mode control, can be widely applied in fields such as Urban Air Mobility, disaster relief, and energy inspection.

- **Urban Air Mobility (UAM):** It can serve as a core vehicle for short-range shuttle services, air taxis, and low-altitude logistics, offering both low noise and high safety features.
- **Disaster Response:** The system can autonomously identify mission requirements and quickly deploy to areas with disrupted traffic or difficult terrain to perform aerial photography, transportation, and communication tasks.
- **Inspections and Monitoring:** This technology can also support smart agriculture and energy facility inspection, carrying sensors and AI edge computing modules for farmland monitoring, crop analysis, wind farm, and power tower inspection. Furthermore, it can combine GPS and visual navigation for high-efficiency patrol and material transport in remote areas and national defense monitoring missions, showcasing the potential for Taiwan's independent disaster prevention technology applications.

Patent Innovation Establishes Independent R&D Technical Advantage

This technology was granted an invention patent (Certificate No.: TWI890115B) by the Intellectual Property Office in July 2025, titled "Fixed-Wing UAV and its Propeller Assembly." The system uses a servo motor to drive a rod mechanism, axially rotating to adjust the propeller direction, automatically changing the thrust vector according to different flight modes. The propeller modules are distributed along the wing's leading edge and can instantaneously fine-tune their angle based on airflow conditions, providing both energy-saving and stability benefits. This innovative structure breaks the limitations of fixed-wing UAVs in VTOL and transition flight, laying the core foundation for the team's "Distributed Electric Propulsion" system.

Cross-Disciplinary Integration: Building a Next-Generation Smart Flight Platform

This team, integrating expertise from computer science, mechanical design, control systems, and artificial intelligence, showcases NYCU's R&D strength in cross-disciplinary innovation. The team's core philosophy is "to propel a green aviation future with intelligence," hoping to establish a practical technology platform for next-generation air mobility and disaster response applications through innovative distributed propulsion and AI decision-making systems.

From Research to Practice: Opening a New Chapter in Green Aviation

Winning the "Future Tech Award" not only affirms NYCU's R&D achievements in smart aviation and AI applications but also symbolizes the campus's research energy moving towards practical application and international alignment. The technology provides a critical solution for next-generation smart air transport, and is expected to have a far-reaching impact in diverse fields such as urban traffic, disaster relief, energy monitoring, and sustainable development.

陽明交大資工系、聯發科技、資策會， 攜手深化企業內部 AI 人才培訓

文／林奕成教授

陽明交大資工系、聯發科技、資策會於 2025 年 6 月 3 日共同簽署 AI 人才培訓擴大合作計畫案。為培育內部 AI 人才，聯發科技與國立陽明交通大學資訊工程學系於 2017 年共同啟動企業 AI 人才培訓計畫，不僅開辦 AI 深度學習進階課程，更引進線上自學平台，至今吸引上萬人次瀏覽，並於 2022 年邀請資策會加入，一同孕育更多 AI 菁英。今年，為能培養更多內部 AI 人才，三方將擴大合作計畫，進一步加入人才驗證機制，以協助企業建立 AI 人才認證系統。

企業 AI 人才培訓計畫為聯發科技為內部員工量身打造之培訓課程，由陽明交大資工系教授親自授課，攜手經驗豐富的助教群，課程涵蓋深度學習理論與實務、大型語言模型、自駕車與機器視覺等之最新核心技術，讓尚未具備 AI 經驗的工程師能夠透過實務演練，獲得穩固的 AI 技術基礎，對於已有 AI 經驗之工程師，則藉此培訓洞悉 AI 技術前瞻趨勢，強化 AI 在實際業務中的運用。資策會則提供資源支持指導，確保計畫順利推動。

陽明交大資訊學院吳毅成副院長表示：「我們與聯發科技的人才教育合作已邁入第八年，聯發科技很早就預見 AI 的發展潛力，投入技術發展與人才培育。近期該公司在 AI 平台的活躍表現，顯見其遠見。很榮幸這次資訊學院能與聯發科技以及資策會進一步合作拓展培訓範疇，確保企業

工程師掌握最前沿的 AI 技術，相信能持續提升企業的研發競爭力與領先地位。」

聯發科技企業策略與前瞻技術梁伯高資深處長則指出：「人才是科技研發的根本。自 2012 年起，聯發科技積極投入 AI 技術的研究發展，趕上 AI 的科技浪潮。然而技術進展很快，並非所有的同仁都有機會在學校時接觸過最新的 AI 技術。因此與陽明交通大學資訊學院合作，提供同仁學習的機會。而也樂見資策會也投入參與，共同協助台灣培養更多的 AI 人才。」

資訊工業策進會智造科技中心蔡明宏主任表示：「資策會多年來持續致力於推動台灣半導體與資訊科技產業的發展，此計畫因應 AI 時代加速來臨，培訓主題緊扣時代脈動，針對產業當前 AI 人才所需的專業技能與應用能力進行有系統的設計與規劃，有助於企業能夠更系統化地培育 AI 前瞻人才，大幅促進台灣科技產業在全球競爭中的創新能力與技術深度，對產業升級具有深遠的正面影響。」

此次擴大企業 AI 人才培訓合作計畫，不僅象徵聯發科技在 AI 人才培訓的重視，也展現陽明交通大學資工系在企業 AI 人才培訓上的貢獻，以及資策會對推動 AI 人才培育的努力。三方期待透過攜手深化合作，持續推動 AI 技術的創新與應用，為台灣科技產業注入新動能。



NYCU Department of Computer Science, MediaTek, and III Join Forces to Strengthen Corporate AI Talent Training

On June 3, 2025, the Department of Computer Science at National Yang Ming Chiao Tung University (NYCU), MediaTek, and the Institute for Information Industry (III) signed an agreement to expand their collaboration on AI talent cultivation.

Since 2017, MediaTek and NYCU's Department of Computer Science have jointly launched the Corporate AI Talent Training Program to nurture in-house AI professionals. The program not only introduced advanced courses in deep learning but also integrated an online self-learning platform, which has attracted tens of thousands of visits. In 2022, III joined the initiative, further enhancing the program's capacity to develop AI experts. This year, the three parties will deepen their collaboration by incorporating a talent certification mechanism to help establish an enterprise-level AI talent accreditation system.

The Corporate AI Talent Training Program is tailored for MediaTek employees and taught directly by NYCU professors, supported by an experienced team of teaching assistants. The curriculum covers the latest core technologies—including deep learning theory and practice, large language models, autonomous driving, and computer vision. The program enables engineers without prior AI background to gain a solid technical foundation through hands-on training, while those with AI experience benefit from insights into cutting-edge developments and enhanced applications in business practice. III provides resources and guidance to ensure the program's smooth implementation.

Professor I-Chen Wu, Associate Dean of College of Computer Science, NYCU, remarked: "Our collaboration with MediaTek on talent education has entered its eighth year. MediaTek foresaw the potential of AI early on, investing in both technology development and talent cultivation. Its recent achievements in AI platforms highlight this vision. We are honored that the College of Computer Science can further expand this partnership with

MediaTek and III to broaden training scope and ensure engineers gain mastery of the most advanced AI technologies. We believe this will continuously strengthen the company's R&D competitiveness and leadership position."

Bor-Sung Liang, Senior Director of Corporate Strategy & Strategic Technology, MediaTek Inc., emphasized: "Talent is the foundation of technological R&D. Since 2012, MediaTek has actively invested in AI research and development to keep pace with the AI revolution. However, given the rapid progress of technology, not all of our colleagues had the opportunity to learn the latest AI techniques during their studies. Partnering with NYCU's College of Computer Science allows us to provide these learning opportunities, and we are also pleased to see III join the effort to help Taiwan cultivate more AI talent."

Calvin Ming-Hung Tsai, Director of Digital Transformation Research Institute, Institute for Information Industry, added: "For years, III has been committed to advancing Taiwan's semiconductor and ICT industries. This program, responding to the acceleration of the AI era, is carefully designed to align with industry needs—covering the professional skills and application capabilities required for today's AI talent. It will enable companies to cultivate forward-looking AI professionals more systematically, significantly boosting the innovation capacity and technological depth of Taiwan's tech sector, with far-reaching positive effects on industrial upgrading."

The expansion of the Corporate AI Talent Training Program not only demonstrates MediaTek's strong commitment to AI workforce development, but also highlights NYCU's contributions to enterprise AI training and III's dedication to advancing talent cultivation. Through this tripartite collaboration, the partners aim to drive AI innovation and application, injecting new momentum into Taiwan's technology industry.

蔡孟勳老師：準備與持續學習是成功的基礎

文／胡翔祐



「我從來不覺得自己特別聰明，但只要下定決心要做好一件事，就會很認真去拼。」國立陽明交通大學資訊工程系蔡孟勳教授這麼形容自己。從國中懵懵懂懂的少年，到如今不但投身教育與研究，更成為獲得多項教學獎項的學者，他的人生軌跡，是不斷自我挑戰、學習與成長的故事。

一堂英文課開始的轉折

蔡孟勳教授的學業並非一路順遂，國中時，他對念書興趣缺缺，課餘時間更愛打球與玩電腦，直到國三那年，一位英文老師徹底改變了他的人生方向。那次段考他考了全班第一，但老師卻拿出另一班的成績單，沒想到竟然有超過十個以上的同學考得比他高分！這不但激起了蔡孟勳的好勝心，也成為了奮發向學的契機。

從那時起，他開始預習功課、熬夜苦讀，只為追上那個「更好的自己」。高中時，老師在黑板上寫下「凡事豫則立，不豫則廢」，這句話不但成了他的座右銘，也奠定了他日後對學習的態度——凡事提早準備，從不怠慢。

被交大感動 從學生到老師的回歸

蔡孟勳老師與交通大學的緣分始於升高二那年參加的交大資工營，那年剛好赫赫有名的世紀強颱——賀伯颱風來襲，他雖淋雨感冒，卻受到隊輔細心照顧，讓他對交大留下深刻印象，並立下：「我一定要念這裡。」的心願，於是交大資工成為他的唯一志願，而最後也真的從學士一路念到博士，更在之後回到母校任教。

求學期間，蔡孟勳老師曾擔任系學會會長，甚至是資工營的「五朝元老」，任內籌辦了全國大資盃體育賽事等大型活動，蔡孟勳教授表示：「即便辦完後幾乎只剩半條命，但那段經歷讓我學會如何與人溝通、帶領團隊，也培養了他日後對教育與組織的熱忱。」

對知識的好奇與研究的執著

1998年台灣正式進入行動通訊時代，遠傳電信 GSM 開台，剛進大學的蔡孟勳老師被這項新技術深深吸引。「我很好奇，電話怎麼能帶著走？」他說。從大一開始，他就旁聽研究所課程，深入了解行動通訊的奧秘，碩博士論文主題一路從 3G

做到 4G。後來在成功大學任教期間，他投入 5G 與物聯網領域研究，關注網路省電、軟體定義網路 (SDN) 與網路功能虛擬化 (NFV) 等議題，他的研究成果已有十多篇論文刊登於 IEEE 頂級期刊，且有六篇論文獲得最佳會議論文獎，而他的動力始終如一：「好奇心。研究最有趣的地方，就是它和生活息息相關。」

教學是一場「自我探索」

2010年起蔡孟勳老師走上教學之路，他始終堅信「師父領進門，修行在個人」，在他的課堂上，不點名、不填鴨，取而代之的是四週一份、一份寫四週的艱難作業。對他來說，老師的角色是引導學生看到「全貌」(big picture)，讓他們自己找到熱情與方向。

在研究室裡，他也不替學生設定題目，「學生該為自己的研究負責。」他笑說，常有研究生問他該做什麼題目、做到什麼程度才能畢業，他總反問：「那你想做什麼？」「你覺得自己做得夠好了嗎？」他相信，唯有學生主動思考、培養自我管理與責任感，才能在學術道路上真正成長。

成大歲月與榮耀

在成大任教期間，蔡孟勳教授多次獲得「教學優良教師」與「教學傑出教師」獎項，2014 與 2019 年更拿下「成功大學教學傑出教師獎(前 1%)」殊榮。這些肯定不僅來自課堂上的創意與投入，更來自他對學生真誠的關懷。他常說：「當工程師，世界上只會多幾十萬行程式碼；但當老師，或許能在學生最無助的時候拉他一把。」正是這份信念，讓他在教學的每一個細節上傾注心力。

給交大資工學弟妹的話

重返母校後，蔡孟勳老師寄語交大資工的學生：「你們都曾是同儕中的前 5%，應該把自己定位成『領導者』。」他強調，除了專業知識，更要培養表達能力、溝通協調力與終身學習的態度。而最重要的，是「正直與責任感」。他鼓勵學生不要害怕犯錯，「真正的自信不是『我一定做得到』，而是『我已經準備好了，就算失敗也不怕』。」對他來說，失敗只是學習的一部分，「換個角度看同一件事，就會有不同的感受。」

一以貫之的精神

無論是學生時期預習課本的習慣，或教學中強調的自主學習，蔡孟勳老師的人生哲學始終圍繞著「凡事豫則立，不豫則廢」這句話，他深信準備與持續學習永遠是成功的基礎，也希望能將這份信念傳遞給下一代。

如今，牆上貼滿學生的卡片與感謝信，正是他多年教學生涯的最佳見證，蔡孟勳教授笑說：「教學不是一份工作，而是一種責任。」在資訊科技日新月異的時代，他用行動詮釋了一個老師的初心——拉一把、點一盞燈，照亮學生前行的路。

Professor Meng-Hsun Tsai: Preparation and Lifelong Learning as the Foundation of Success

"I've never thought of myself as particularly smart, but once I decide to do something well, I give it my all," said Professor Meng-Hsun Tsai of the Department of Computer Science at National Yang Ming Chiao Tung University (NYCU). From a somewhat aimless middle school student to an award-winning educator and researcher, his life story is one of constant challenge, learning, and growth.

A Turning Point from an English Class

Professor Tsai's academic journey did not start smoothly. As a teenager, he was far more interested in basketball and computers than in studying. That all changed in his third year of junior high, when an English teacher completely altered his path. After earning the top score in his class, his teacher showed him the grade sheet from another class—where over ten students had scored even higher. That moment sparked Tsai's competitive drive and became the catalyst for his renewed passion for learning.

From then on, he began to preview lessons and stay up late to study, determined to catch up to a "better version" of himself. In high school, one teacher wrote on the board the saying, "Those who are prepared will succeed; those who are not will fail." This phrase became Tsai's lifelong motto and shaped his attitude toward learning: always prepare early and never procrastinate.

From Student to Professor — A Journey Rooted in NCTU

Tsai's connection with National Chiao Tung University (now NYCU) began in his second year of high school, when he joined the NCTU Computer Science Camp. That year, Typhoon Herb, one of the strongest of the century, struck Taiwan. Despite getting drenched and catching a cold, Tsai was deeply moved by the thoughtful care of his camp counselors. He decided then and there: "I must study here."

NCTU Computer Science became his one and only choice, and he went on to complete his bachelor's, master's, and doctoral degrees there—eventually returning as a faculty member.

During his student years, Tsai served as president of the student association and was even a "five-time veteran" of the CS camp. He organized large-scale events such as the National Computer Science Sports Cup. "It almost killed me," he laughed, "but that experience taught me how to communicate, lead a team, and ignited my passion for education and organization."

Curiosity for Knowledge and Dedication to Research

When Taiwan officially entered the mobile communication era in 1998 with FarEasTone's GSM service launch, Tsai, then a college freshman, was captivated. "I was fascinated—how can you carry a phone and still make calls?" he recalled.

From his first year, he began auditing graduate-level courses to learn the fundamentals of mobile communications. His master's and doctoral research progressed naturally from 3G to 4G technologies. Later, as a professor at National Cheng Kung University (NCKU), he focused on 5G and IoT research, exploring areas such as energy-efficient networking, Software-Defined Networking (SDN), and Network Function Virtualization (NFV).

His research has produced over ten papers published in top IEEE journals, with six earning Best Paper Awards at international conferences. What drives him remains simple: curiosity. "The beauty of research is that it

connects deeply with everyday life," he said.

Teaching as a Journey of Self-Discovery

Since stepping into teaching in 2010, Professor Tsai has lived by one principle: "A master can open the door, but the disciple must walk through it."

In his classes, there are no roll calls and no spoon-feeding. Instead, students tackle one rigorous four-week assignment every month. Tsai believes a teacher's role is to help students see the big picture so they can find their own passion and direction.

In his lab, he never assigns research topics for students. "Students should take ownership of their research," he said. When asked, "What should I work on?" or "How much is enough to graduate?", he always responds with questions: "What do you want to do?" and "Do you think it's good enough?" To him, true growth in academia comes from independent thinking, self-discipline, and accountability.

The NCKU Years and Teaching Honors

During his time at NCKU, Professor Tsai received multiple "Excellent Teaching" and "Outstanding Teaching" awards. In both 2014 and 2019, he earned the prestigious NCKU Outstanding Teaching Award—reserved for the top 1% of faculty.

These honors reflect not only his creativity and dedication in the classroom but also his genuine care for students. "As an engineer, you might add a few hundred thousand lines of code to the world," he said, "but as a teacher, you might lift a student up at their lowest moment." That belief drives his deep commitment to every aspect of teaching.

Words for NYCU CS Students

Upon returning to his alma mater, Professor Tsai shared this message with NYCU Computer Science students:

"You were all once the top 5% among your peers—you should see yourselves as leaders."

He emphasizes the importance of not only technical skills but also communication, teamwork, and lifelong learning. Most importantly, he urges students to uphold integrity and responsibility.

"Don't be afraid of failure," he says. "True confidence isn't 'I can definitely do it,' but rather 'I'm well prepared—even if I fail, I won't be afraid.'" To him, failure is simply part of the learning process: "When you look at the same thing from a different angle, it can feel completely different."

A Consistent Philosophy

From his early habit of previewing lessons to his emphasis on self-directed learning in teaching, Professor Tsai's life philosophy has always revolved around the same belief: "Those who are prepared will succeed; those who are not will fail."

He firmly believes that preparation and continuous learning are the foundations of success—and hopes to pass that spirit on to the next generation.

Today, the walls of his office are covered with thank-you cards and letters from students, tangible reminders of his teaching journey. Smiling, he says, "Teaching isn't just a job—it's a responsibility."

In an era of rapidly changing technology, Professor Tsai continues to embody the essence of an educator: to reach out a helping hand, to light a lamp, and to illuminate the path forward for his students.

交大日資工系友回娘家暨傑出系友頒獎典禮

文／胡翔祐



2025年4月12日，國立陽明交通大學資訊工程系一如往年，在「交大日」舉辦了「資工系友回娘家」活動，邀請傑出校友們回到母校分享成功的經驗，並舉行頒獎典禮，表彰在各領域表現卓越的校友與系友。這次活動為不但為校友和師長提供了寶貴的交流機會，更為學弟妹們開拓了未來職涯的視野，同時也展現了交大資工系深厚的校友人脈以及系所深耕多年，培育無數英才的貢獻。

傑出校友致詞

蕭清志學長的挑戰與卓越之道

蕭清志學長是國立交通大學計算與控制工程學系 64 級的傑出校友，現職為緯創軟體董事長暨執行長，憑藉著在交大培養的硬實力，及自身獨到的眼光，他不做產品，專注於客製化的服務，帶領公司在軟體與資訊服務領域走出臺灣，邁向國際。

除了分享公司經營的策略及成果展望，蕭清志學長也分享了他從鄉下高中到交大求學的奮鬥歷程，他坦言一開始在計控系成績曾是最後一名，但後來憑藉不懈的努力，不僅參與了許多不同的社團增廣見聞，還同時兼顧課業，在畢業時成功獲得了普渡大學的全額獎學金。在軟體科技業

取得巨大成功的她想告訴學弟妹們：「要勇於接受挑戰、不斷追求卓越。」尤其強調，每個人都應「明明白白地認識自己」，才能夠做到「量材適性」；只有量材，表現才會卓越；只有適性，才能去享受那完完美美的快樂。學長的經歷證明了，只要能理解自己、有追求卓越和面對挑戰的勇氣，任何起點都能通往卓絕的成就。

最後，蕭清志學長也提到交大及系所對於自身的巨大影響，希望能在將來有更多與陽明交大產學合作的機會，讓台灣目前還有許多發展空間的軟體產業，能搖身一變成為世界級的產業，輸出更多的國際人才到世界各地紮根，最終能夠將台灣打造成一個軟體帝國。

卞志祥學長的成長心態

卞志祥學長是國立交通大學資訊科學系 83 級的傑出校友，現職台灣微軟總經理，卞志祥學長分享自己從眷村鄉下小孩，一路努力到交大讀書的心路歷程。同時，他也強調獲得傑出系友獎項，不只是份榮譽，更是一份沉甸甸的責任，今後也將不負這份榮譽，持續為台灣科技產業發光發熱。

在致詞中，他特別提到希望自己能將微軟的全球資源與技術帶進臺灣的科技生態系，並結合

臺灣強大的硬體優勢，與國際市場連結，再將成果反向輸出回國際市場。與此同時，他也承諾政府，將致力於人才培育、建構強大軟體夥伴生態區，以及科技落地產業的實踐，一步一步將台灣打造成更具國際能見度的科技大國。

在述說完精彩地成功歷程及未來願景後，卞志祥學長滿懷感恩及謙虛的心，將自身的卓越歸功於成功跟上資通訊產業快速變化的這 30 年，以此來鼓勵學弟妹們：資通訊產業是變化非常快速的行業，為此，務必要保持想像力與成長心態 (growing mindset)、永遠不要害怕挑戰，甚至要主動迎接挑戰。他以一句深刻的話勉勵大家：「機會不是留給準備好的人，而是給勇於踏出第一步，主動迎接挑戰的人。」他最後強調，要好好運用陽明交大的所有資源、所有學長姐，「真正的巨人其實是陽明交大，我們只是站在巨人的肩膀上往外看、往內聚，完成更好的成就。」

傑出系友頒獎典禮

今年的頒獎典禮中，共有九位傑出系友獲得了表彰，他們在學術界與產業界皆有卓越表現，並對社會有重要貢獻。

- 朱進平 (資訊工程所 83 級碩士)：1996 年與高中同學共同創辦 AutoCount 軟體公司，專注為中小企業研發高校 ERP 解決方案，現已成為馬來西亞中小企業首選管理系統，並於 2023 年成功登陸吉隆坡證券交易市場。他回憶在校時心懷創業夢想，並分享了創業初期虧損後，回歸本行做財務會計軟體，並成功規模化推廣的關鍵經驗。
- 沈上謙 (資訊科學系 92 級學士、94 級碩士)：現任職於 Google 技術顧問部的總經理。他曾是 Ubitus 科技的共同創辦人兼技術長，在當時更獲選為 NVIDIA 五大最佳科技價值企業獎。沈學長透過影片表示，他熱衷參與創業社群及輔導創業團隊，並有極高的意願幫助想要去矽谷工作的人，身為北美校友會創辦人的他，希望能多多舉辦活動，交流每天都在創新的 AI 產業。
- 周本宜 (資訊工程系 79 級學士)：國富綠景創投合夥人，從事創業投資 25 年，發起私募基金，成功培育 30 多家公司在國內外上市或併購退出。他提到在交大的時光，結識了許多不同系的好友，這都成為未來進入創投業的養分，再加上資工系所訓練的邏輯思考，幫助他整理了許多資訊，在職場上無往不利。
- 范俊逸 (資訊工程所 82 級碩士)：現任財團法人資訊工業策進會執行長、國立中山大學資訊工程學系特聘教授。他獲得多項學術殊榮，更入選為史丹佛大學發布的全球前 2% 頂尖科學家。他提到教職生涯中不斷吸收各種不同領域的知識，並以「遇到挑戰，就是克服它」的

精神，希望能與各位學長姐們一起合作，完成百工百業 AI 化的未來。

- 張本元 (計算機工程所 75 級碩士、資訊工程所 84 級博士)：現任中華電信企客分公司總經理，他整合中華電信集團七大領域的技術能量，提供智慧政府、城市、金融、製造、醫療、環境等整合資通訊服務，邁向數位生態系統領導品牌的願景。
- 梁賓先 (計算機工程系 80 級學士、資訊工程所 82 級碩士)：現任華苓科技股份有限公司董事長兼總經理。他於 1999 年創立華苓科技，成為 BPM 軟體領導品牌至今，並在 2011 年創立臺灣第一個物聯網組織「台灣物聯網協會」，曾獲得 IT Matters 人才獎等多項殊榮。
- 陳斌 (計算機工程系 77 級學士、資訊工程所 79 級碩士)：現任財金資訊股份有限公司總經理。他主導彰化銀行 TCP/IP 網路系統、核心帳務系統、網路銀行 app 等重大系統建置，更是臺灣行動支付跨店之機構交易及跨境交易之推動者。他以「勤能補拙，終身學習」勉勵大家，不管做什麼一定都能為交大做出很多貢獻。
- 童雅蓉 (資訊工程系 82 級學士)：現職 T and T Consulting Services, Inc. CEO。他領導公司迅速成長，年營收超過 3700 萬美元，服務美國 25 個聯邦機構，榮獲多項國內外獎項，更包括中華民國第 23 屆海外華人創業楷模獎。
- 蔡明哲 (資訊科學系 81 級學士、資訊科學所 83 級碩士)：悠識數位顧問創辦人暨用戶體驗策略教練。他是國內 UX (用戶體驗) 專業的先行者，同時兼任 HPX 社群創辦人、醫策會 ITPS 專家小組委員。

系友會與系務發展

在頒獎典禮後，系友會副會長蔡祈岩致詞，除了感謝校友們的大力支持外，更宣布了日本及北美分會的校友會已正式成立。兩個新成立的分會會長均透過影片表達了希望能夠聚集大家力量，幫助系友快速融入當地生活並互相幫助的願景。

蔡祈岩副會長呼籲更多校友加入系友會，一起參與接下來將舉辦的活動，讓系友會變得更好，服務到更多的系友。隨後，他也介紹了資工系近期的發展成果，特別是與產業界的合作計畫，並展望未來系上的研究方向，期望資工系能繼續在全球資訊科技領域保持領先地位。

總結來說，2025 交大日資工系友回娘家的整場活動中不但充滿了溫馨與感動，更讓眾多傑出校友們回顧了在交大的時光，也分享了他們在職場上的成功經驗。這次「回娘家」活動不僅加強了校友與母校的聯繫，也激勵了在校學生，為未來的挑戰做好準備。

NYCU CS Alumni Homecoming and Distinguished Alumni Awards Ceremony



On April 12, 2025, the Department of Computer Science at National Yang Ming Chiao Tung University (NYCU) held its annual “CS Alumni Homecoming” during “NCTU Day.” The event invited distinguished alumni to return to their alma mater to share their success stories and celebrate the Distinguished Alumni Awards Ceremony, recognizing graduates who have achieved excellence in diverse fields.

The event not only provided valuable networking opportunities for alumni and faculty but also broadened the career horizons of current students, showcasing the Department’s rich alumni network and its long-standing contributions to cultivating outstanding talent.

Keynote Speeches by Distinguished Alumni Ching Hsiao— The Path of Challenge and Excellence

Mr. Ching Hsiao, a distinguished alumnus from the Class of 1975 of the Department of Control and Computer Engineering at National Chiao Tung University, is currently Chairman and CEO of WITS. With the strong technical foundation he developed at NCTU and his sharp business vision, he chose not to produce products but to focus on customized software services, leading his company to expand beyond Taiwan and into the global software and IT services market.

In his speech, Mr. Hsiao shared not only his management strategies and future outlook but also his personal journey—from a rural high school student to studying at NCTU. He candidly recalled that he once ranked last in his class, but through perseverance, active participation in various student clubs, and academic dedication, he graduated with a full

scholarship from Purdue University. Having achieved great success in the software industry, he urged students to embrace challenges and pursue excellence continuously. He emphasized the importance of “knowing oneself clearly” to achieve “aptitude-based excellence.”

“Only when you truly understand yourself can you play to your strengths and find real joy in what you do,” he said.

Mr. Hsiao concluded by acknowledging NCTU’s profound influence on his career and expressed his hope to strengthen future industry-academia collaborations with NYCU. He envisions helping Taiwan’s software industry—still full of untapped potential—transform into a world-class industry, cultivating international talent and ultimately turning Taiwan into a “software empire.”

Sean Pien — The Growth Mindset

Mr. Sean Pien, a distinguished alumnus from the Class of 1994 of the Department of Computer Science, is currently General Manager of Microsoft Taiwan. He shared his journey from a child growing up in a military dependents’ village to studying at NCTU, emphasizing that receiving this award was not only an honor but also a significant responsibility—a reminder to keep contributing to Taiwan’s tech industry.

He expressed his goal of integrating Microsoft’s global resources and technologies into Taiwan’s tech ecosystem, leveraging the nation’s hardware strengths to connect with the international market—and, in turn, bringing global results back to Taiwan. He also pledged to support talent cultivation, software ecosystem development, and technology localization, helping to enhance Taiwan’s international

visibility in the tech world.

Reflecting on his 30 years in the fast-changing ICT industry, Mr. Pien attributed his success to staying adaptable and maintaining a growth mindset. He encouraged students to stay imaginative and fearless in facing challenges:

“Opportunities don’t come to those who are merely prepared—they come to those who take the first step and dare to embrace challenges.”

He concluded with heartfelt gratitude to NYCU:

“The true giant is NYCU. We are simply standing on the shoulders of this giant—looking outward to new possibilities and inward for self-improvement—to achieve greater things.”

Distinguished Alumni Award Recipients

This year, nine alumni were honored for their outstanding achievements across academia, industry, and society:

- Jin-Ping Chu (M.S. in Computer Engineering, Class of 1994) – Co-founder of AutoCount Sdn Bhd in 1996, developing ERP solutions for SMEs. Today, AutoCount is Malaysia’s leading business management system and was listed on the Kuala Lumpur Stock Exchange in 2023. He recalled his entrepreneurial journey—from early losses to success in scalable financial software—highlighting persistence and strategic focus.
- Victor Shen (B.S. in Computer Science, 2003; M.S., 2005) – Currently General Manager, Google Technical Consulting. Formerly co-founder and CTO of Ubitus, recognized among NVIDIA’s Top 5 Tech Value Companies. Speaking via video, he shared his passion for mentoring startups and building global AI connections, hoping to strengthen the alumni network in North America.
- Ben-Yi Chou (B.S. in Computer Engineering, Class of 1990) – Partner at GRC Ventures, with 25 years in venture capital. Having helped over 30 companies go public or be acquired, he credited his NCTU training—especially logical thinking and interdisciplinary friendships—as invaluable to his success in investment.
- Chun-I Fan (M.S. in Computer Engineering, 1993) – Currently President of the Institute for Information Industry (III) and Distinguished Professor at National Sun Yat-sen University. Recognized among Stanford University’s top 2% of global scientists, he urged continued collaboration to achieve “AI transformation across industries.”
- Pen-Yuang Chang (M.S. in Computer Engineering, 1986; Ph.D. in Computer Science, 1995) – General Manager, Chunghwa Telecom Enterprise Business Group, integrating ICT services across seven domains, including smart government, finance, healthcare, and manufacturing, steering Chunghwa Telecom toward becoming a digital

ecosystem leader.

- Bin-Hsien Liang (B.S. in Computer Engineering, 1991; M.S. in Computer Science, 1993) – Chairman and CEO, Flowring Technology Co., Ltd. Founded in 1999, the company became a BPM software leader and later established the Taiwan IoT Association in 2011. He has received numerous industry awards, including the IT Matters Talent Award.
- Bin Chen (B.S. in Computer Engineering, 1988; M.S. in Computer Science, 1990) – General Manager, Financial Information Service Co. (FISC). He led the development of key banking systems such as core accounting, internet banking apps, and Taiwan’s cross-store and cross-border mobile payment systems. His motto:

“Diligence compensates for limitations—lifelong learning leads to contribution.”

- Sophia Tong (B.S. in Computer Science, 1993) – CEO, T and T Consulting Services, Inc. She led the company to annual revenues exceeding US\$37 million, serving 25 U.S. federal agencies. She was also named a Model Overseas Chinese Entrepreneur by the ROC government.
- Richard Tsai (B.S. in Computer Science, 1992; M.S. in Computer Science, 1994) – Founder and UX Strategy Coach, InsightX Digital Consulting. A pioneer in Taiwan’s user experience (UX) field, he also founded the HPX Community and serves as an expert committee member for ITPS under the Joint Commission of Taiwan.

Alumni Association and Departmental Development

Following the awards, Vice President of the Alumni Association, Rock Tsai, expressed gratitude for alumni support and announced the official establishment of the Japan and North America Chapters. Both new chapter presidents shared video messages outlining their vision to strengthen local networks and foster mutual support among overseas alumni.

Mr. Tsai encouraged more alumni to join the association and participate in upcoming events to expand its reach and impact. He also shared the Department’s latest research and industry collaboration initiatives, expressing confidence that NYCU CS will continue to lead globally in information technology research and innovation.

The 2025 NYCU CS Alumni Homecoming was filled with warmth, gratitude, and inspiration. It allowed distinguished alumni to reminisce about their university days, share their professional journeys, and motivate current students to embrace future challenges. The event not only strengthened ties between alumni and their alma mater but also inspired a new generation of students to carry forward the Department’s legacy of excellence.

在科技與人生之間 卞志祥學長的選擇與堅持

文／資訊工程學系 系學會（楊睿軒、曾士珍、林幼馨）採訪、胡翔祐撰文



「我發現我講話有人聽，有些人講話沒人聽。」這是卞志祥回憶起大學時期對人際敏感度的初體驗，也成為他日後投入管理與商業的起點。

畢業於交通大學資訊科學系與資訊管理碩士班，卞志祥的求學與職涯歷程，是一段不斷整合「技術力」與「人際力」的探索過程。他從高中開始愛上程式設計，進入交大後精進程式語言與邏輯思維能力。然而在大三時，他意識到自己對商業與人更有強烈的興趣，開始思考如何結合資訊背景與對金融市場的敏感度。於是，他選擇進入資管所，投身財務工程、程式交易與人工智慧領域，為自己開啟一條跨領域的職涯道路。

在校期間，他積極參與社團，從熱音社到創作社，甚至在對外營隊中擔任隊輔，除此之外，他也曾在資工系計中（資工系計算機中心）打工、開娃娃車接送學生、當補習班老師，以「最小時間創造最高單位報酬」的邏輯，安排每一段經歷。這些活動不僅讓他拓展人脈，也讓他逐漸認識到自己的號召力與同理心，是獨樹一幟的職涯資產。

出社會後，卞志祥的第一份與第二份工作仍以工程師為主，專注於程式交易系統的開發，將在研究所習得的技術實踐於台灣、新加坡與香港等地的金融市場。然而，他並未止步於技術人員，而是開始主動轉向商業與行銷領域，歷經創投、電信、顧問等多元產業，逐漸累積跨域能力與管理視野。

「不要浪費每一段工作經驗。」談到管理，卞志祥始終強調「被管理」的重要。他認為，一個好主管，一定曾是個好部屬。透過觀察與體驗不同風格的管理方式，才能發展出屬於自己的領導哲學。他引用微軟內部的「領導三原則」作為信念根基：創造清晰（Create Clarity）、激發能量（Generate Energy）、交付成果（Deliver Results）。

領導不只是喊口號。他強調：「你不能只對上交差，更要對下承接壓力，讓團隊知道他們被看見、被信任。」面對挑戰，他選擇以身作則、重新凝聚共識，而非責備團隊。他認為，真正的領導者是能定義問題、整合資源並驅動解方的人。

在職涯選擇上，他始終堅持三個核心問題：我喜歡什麼？我擅長什麼？市場需要什麼？這三者的交集，就是轉職或轉向的依據。他也強調，即使離職，也要維持與前東家的良好關係，避免成為直接競爭者，這是他對專業倫理與人脈經營的重視。

談到工作的評估標準，他歸納出四個面向：是否具趨勢性？是否與能力與興趣結合？是否有歷練與發揮空間？是否與企業文化與主管風格契合？唯有四者齊備，才能在工作中獲得成就感與長期發展。

面對失敗與抉擇，卞志祥的態度是：「停損不是放棄，而是為了重新出發。」他強調，關鍵不在於是否跌倒，而在於是否能從中整理與反思，並用更成熟的姿態再出發。

在 AI 快速發展的時代，他認為最大的威脅不是 AI 本身，而是人是否失去定義問題的能力。

「AI 可以解決 80% 的已知問題，但人要能定義問題、解讀結果與管理 AI。」因此，他鼓勵學生要培養跨域視野與持續學習的能力，特別是資工學生，更要從單純的寫程式者，轉為能整合技術、商業與人際的橋樑角色。

訪談尾聲，卞志祥語重心長地說：「保持好奇心、保有人味，科技才能真正為人所用。」這句話，也道出了他一路走來的價值核心：在人與科技之間，找到自己的位置，發揮真正的影響力。

Where Technology Meets Life: The Decisions and Beliefs Guiding Alumnus Sean Pien

"I noticed that when I spoke, people paid attention, while others were often overlooked." It was a small but telling insight that sparked Sean Pien's interest in getting along with other people. This guided him toward management and business.

Pien's academic journey captures that blend perfectly: mastering technical expertise while learning how to interact effectively with people. Pien earned a bachelor's degree in Computer Science and later a master's in Information Management from National Chiao Tung University. His passion for programming began in high school, and NCTU gave him the space to really sharpen his coding and problem-solving skills.

But in his junior year, something shifted. Business, people, and decision-making strongly attracted him. That moment was a real turning point. He began to see ways his IT background could connect with finance, which pushed him to pursue a master's in Information Management. There, he dug into financial engineering, algorithmic trading, and AI. This opened the door to his cross-disciplinary career.

University wasn't just about studying for him. Back in university, he threw himself into campus life like joining the music club, exploring creative writing, and even taking on a role as a counselor at off-campus camps. At the same time, he kept busy with all kinds of part-time work, from helping out at the Computer Science department's computer center to driving the school shuttle and teaching at a cram school. Behind all of this was a simple principle: getting the highest return for the smallest investment of time. Along the way, he not only expanded his network but also saw how his leadership and empathy could become real strengths — ones that continue to shape his career.

Early in his career, Pien worked as an engineer, building program trading systems and applying what he had learned in graduate school across financial markets in Taiwan, Singapore, and Hong Kong. But Pien didn't just stick to engineering. He moved into business and marketing, working in areas like venture capital, telecommunications, and consulting, all while steadily growing his cross-disciplinary skills and management perspective.

"Every job teaches you something," Pien likes to say. When it comes to management, he's convinced that the best leaders are people who once knew how to follow. Seeing how different managers lead and experiencing it yourself help you figure out your own approach to leadership. He often points to Microsoft's "Three Leadership Principles"—Create Clarity, Generate Energy, Deliver Results—as the blueprint for his thinking.

Leadership goes beyond slogans. He insists, "It's not just about answering to your boss. You need to

carry the responsibility for your team members and earn their trust." When challenges hit, he leads by example, pulling the team back together instead of blaming anyone. For him, true leadership means identifying problems, coordinating resources, and delivering meaningful solutions.

Whenever he faces a career decision, he asks himself three questions: What excites me? What am I actually good at? And what's in demand out there? The point where all three meet usually guides his next move. He also stresses that leaving a job shouldn't mean burning bridges. Keeping strong ties with past employers and avoiding head-to-head competition isn't just professional courtesy; it's a smart, long-term strategy that keeps the door open for future collaboration and unexpected opportunities.

When evaluating a job, he looks at four key factors:

1. Is this job forward-looking?
2. Does it match my skills and passions?
3. Will it let me grow and contribute meaningfully?
4. And does it fit with the company culture and my manager's style?

When all four line up, that's when he feels fulfilled and confident he's building a career that can last.

Pien sees failure and difficult choices differently. He says, "Cutting your losses doesn't mean giving up. It means getting ready to start again." For him, the important part isn't falling—it's taking a step back, learning from it, and returning stronger.

With AI advancing so rapidly, he says the real danger isn't the technology itself—it's that we may lose the ability to think critically about the problems we're trying to solve. He says, "AI can handle about 80% of the problems we already know. The tricky part is still on us. We need to ask the right questions, make sense of the responses, and figure out how to use them effectively." Pien encourages students to keep an open mind and think across disciplines, while also making lifelong learning a habit. When it comes to Computer Science majors, he says it's not just about coding—you also need to be the kind of person who can connect technology with business and people.

Before the interview ends, Pien takes a moment to reflect, then says, "Stay curious and stay human—that's the only way technology can truly work for people."

Those words really sum up his outlook: it's about navigating the space between humanity and technology, and using it to create a positive, lasting impact.

資工人的製造業之路

宇清數位智慧涂耀仁總經理的實務經驗談

文／劉禹辰

在資訊科技與產業數位化浪潮下，資工背景的人才早已不限於軟體或網路領域。在製造業，資訊工程師同樣扮演著舉足輕重的角色。

曾任職台積電十八年的涂耀仁，便是其中的先行者。從交大資工的程式新鮮人，到掌握 CIM 與自動化系統的專家，他用十八年的現場經驗證明：懂技術，還要懂產業，資工人的舞台遠比想像更廣。

從交大資工到台積電：進入製造現場的起點

涂耀仁畢業於國立交通大學資訊工程學系 80 級，並於民國 82 年取得資工所碩士學位。而 1995 年，退伍不久的他穿上無塵衣、走進台積電工廠，正式踏上資訊工程師的職涯。那時的產線仍以人工與半自動化為主，他的任務是維護工廠系統、確保機台穩定運作。「那兩年的輪值經驗，是我一輩子的底子。」他笑著回憶。在夜班與機台的轟鳴聲中，他逐漸理解一個關鍵：「程式語言會淘汰，但現場經驗永遠不會。」這段親身體驗，也成為他後來能在 IT 與製造部門之間擔任橋樑的基礎。

幾年後，他主動申請調入製造部門，從系統開發者變成現場的「使用者」。涂耀仁分享道：「資訊部門常因維護負擔而抗拒新功能，結果兩邊誰也不滿意，後來我才明白，只有懂現場，才能寫出真正有用的系統。」在生產線上帶線、觀察製程後，他逐步掌握 Domain Knowledge（領域知識）的重要性。涂耀仁強調，這是資工人進入製造領域最關鍵的一課：「技術只是工具，真正的價值在於理解現場。」

從 8 吋到 12 吋：見證自動化時代的開展

隨著半導體產業進入高速成長期，涂耀仁參與了台積電 8 吋與 12 吋廠的 CIM (Computer Integrated Manufacturing, 電腦整合製造系統) 與 AMHS (Automated Material Handling System, 自動搬運系統) 開發。他與團隊也參與了 12 吋智慧製造的軟體規劃與整合，從生產排程、物流搬送、機台自動化到派工演算法，皆在他的參與下完成設計與導入。

涂耀仁提到，當時嘗試導入 Rule-based 派工系統 (以人工邏輯設定規則)，但隨著生產線複雜度增加，僅靠規則式方法難以因應，於是又轉向基因演算法 (Genetic Algorithm) 與最佳化排程 (Optimized Scheduling)。「理論上最有效率的演算法，不一定是現場最喜歡的。」他指出。演算法雖能算出理論上最有效率的方案，卻讓現場人員難以理解其邏輯，導致信任與操作困

難。最終，他們採用「混合式派工模型」——既保留人工邏輯的穩定，又利用演算法提升效率。這段經驗讓他體悟：技術的成功，必須以使用者能接受與維護為前提。

離開台積電，走向智慧製造

2013 年離開台積電後，涂耀仁加入宇清數位智慧股份有限公司，投入智慧製造與 APS (Advanced Planning and Scheduling, 先進規劃與排程系統) 的軟體開發與導入服務。從半導體、PCB (Printed Circuit Board, 印刷電路板)，到生技、CNC (Computer Numerical Control, 電腦數值控制) 加工，他協助各產業導入自動化與 AI 技術。

但他也提醒：「近年 AI 與機器學習雖快速發展，但 AI 只是工具，真正的挑戰是理解產業問題、找到可落地的解法。」在他眼中，未來的資工人不再只是寫程式，而是用演算法解決真實問題的「設計師」。在智慧製造時代，跨領域合作已成常態，資工人都應該學會如何將演算法轉化為實際生產效益。

給未來資工人

涂耀仁歸納出五個關鍵建議，作為給後輩的提醒：

1. 明確自己的方向

寫程式只是手段，關鍵是想解決什麼問題。每個領域的方向與挑戰都不同，提早確立興趣，才能有明確的職涯路徑。

2. 別盲目追新技術

技術更迭快速，理解問題與整合資源的能力才是根本。

3. 重視溝通與理解使用者

成功的系統開發，要能被使用者採納、維護並創造效益。多與使用者交流，學會用他們的語言談技術。

4. 珍惜「從零到一」的經驗

參與新系統的規劃與試錯過程，是成長最快的時刻。不要害怕犯錯，那是最寶貴的學習。

5. 建立跨領域思維

在智慧化製造時代，當資訊與工業工程、數學、甚至土木等領域逐漸融合，資工人的價值在於「用技術解決真實問題」。

從寫程式的工程師，到引領智慧製造的決策者，涂耀仁用經驗證明：資工人的價值，不僅存在於螢幕前的程式碼，更在於能讓技術於現實世界綻放光芒。

The Path of a Computer Engineer in the Manufacturing Industry Practical Insights from Max Tu, General Manager of YouThought Corporation



With the wave of information technology and industrial digitalization, talents with computer science backgrounds are no longer limited to software or internet domains. In the manufacturing industry, computer engineers play equally vital roles.

Max Tu, who worked at TSMC for 18 years, is one such pioneer. From a programming novice at NCTU's Department of Computer Science to an expert in CIM and automation systems, Tu's journey proves one thing through nearly two decades of hands-on experience: understanding technology is not enough — one must also understand the industry. The stage for computer engineers is far broader than many imagine.

From NCTU Computer Science to TSMC: Entering the Manufacturing Floor

Tu graduated from the Department of Computer Science, National Chiao Tung University (Class of 1991), and received his master's degree in 1993. In 1995, shortly after military service, he donned a cleanroom suit and stepped into TSMC's fabs, officially beginning his career as an information engineer.

At that time, semiconductor production lines were still largely manual or semi-automated. His task was to maintain factory systems and ensure stable equipment operation.

"Those two years of shift work became the foundation of my entire career," he recalled with a smile. Amid the hum of machines during night shifts, he realized a crucial truth: "Programming languages become obsolete, but on-site experience never does." This first-hand understanding later enabled him to bridge IT and manufacturing departments.

A few years later, he proactively requested a transfer to the manufacturing department — from system developer to system "user."

"IT engineers often resist new features because of maintenance burdens, leading to dissatisfaction on both sides," Tu shared. "I later realized that only by understanding the shop floor can you develop truly useful systems."

Through direct observation and production experience, he came to appreciate the importance of domain knowledge. "Technology is just a tool," he emphasized. "The true value lies in understanding the real-world environment."

From 8-Inch to 12-Inch: Witnessing the Rise of Automation

As the semiconductor industry entered a period of rapid growth, Tu participated in the development of TSMC's 8-inch and 12-inch CIM (Computer Integrated Manufacturing) and AMHS (Automated Material Handling System) systems.

He and his team also helped plan and integrate hardware and software for 12-inch smart manufacturing — from production scheduling and logistics systems to equipment automation and dispatching algorithms.

At one point, they experimented with rule-based dispatch systems (using human-defined logic rules). However, as production complexity increased, such methods proved insufficient, leading them to adopt genetic algorithms and

optimized scheduling.

"The most efficient algorithm in theory isn't always the most popular on the factory floor," Tu noted.

Although algorithms can generate optimal schedules, they often produce results that are difficult for operators to interpret, reducing trust and usability. Ultimately, they implemented a hybrid dispatching model — combining the stability of human logic with the efficiency of algorithmic optimization.

From this experience, Tu learned that technical success depends on whether end users can accept and maintain the system.

Leaving TSMC: Pioneering Smart Manufacturing

After leaving TSMC in 2013, Tu joined YouThought Corporation, focusing on software development and implementation services for smart manufacturing and APS (Advanced Planning and Scheduling) systems.

His work has since spanned various industries — from semiconductors and PCBs (Printed Circuit Boards) to biotechnology and CNC (Computer Numerical Control) machining — helping enterprises adopt automation and AI technologies.

He offers a word of caution, however:

"AI and machine learning have advanced rapidly, but AI is only a tool. The real challenge lies in understanding industrial problems and finding solutions that work in practice."

In Tu's view, the computer engineer of the future is not just a programmer but a designer of solutions — using algorithms to address real-world challenges. In the era of smart manufacturing, cross-disciplinary collaboration is the norm, and engineers must learn to translate algorithms into tangible production value.

Advice for Future Computer Engineers

Tu summarizes five key lessons for the next generation:

1. Define Your Direction Clearly

Programming is only a means — the key is identifying what problem you want to solve. Each domain has its own challenges; finding your interest early helps shape a clear career path.

2. Don't Chase New Technologies Blindly

Technologies evolve quickly; the ability to understand problems and integrate resources is more fundamental.

3. Value Communication and User Understanding

A successful system is one that users can adopt, maintain, and benefit from. Engage with users and learn to speak their language.

4. Cherish "Zero-to-One" Experiences

Participating in new system design and trial-and-error processes offers the fastest growth. Don't fear mistakes — they're the most valuable form of learning.

5. Develop Cross-Disciplinary Thinking

In the age of intelligent manufacturing, computer science increasingly intersects with industrial engineering, mathematics, and even civil engineering. The value of computer engineers lies in solving real-world problems through technology.

From a programmer to a leader in smart manufacturing, Max Tu's journey demonstrates that the value of computer engineers extends far beyond lines of code — it lies in their ability to make technology shine in the real world.

王其勳與資訊世界的變革之路 文／胡翔祐



王其勳學長的故事，是一部從台灣走向世界的科技人奮鬥史。他在海外長大，升大學時，對當時剛萌芽的電腦程式設計深感興趣，在高中老師的建議下填了交大的計算機工程學系，一開始甚至不知道這個科系到底在做什麼，但任誰也沒想到，竟然成為了王其勳「資訊之路」的開端。

從底層研發到澳洲通路霸主

畢業後，王其勳加入了神通集團旗下神通電腦，一頭鑽進了最底層的研發世界，那時，他做的是鍵盤裡晶片的程式設計，程式記憶體僅有256K。為了趕電腦展的產品，他曾經通宵達旦，兩三天沒有睡覺；在底層的研發淬煉自己的技術實力，同時，也萌生想要拓展更寬廣視野的想法。就在這時，公司剛好要在英國設廠，於是他自願被外派到英國；然而這可不只是工作地點的轉換，更是工作類別的轉換，他從研發轉向產品行銷（Product Sales and Marketing）。

因緣際會下，他在一九九八年轉職到神通集團旗下專攻通路事業的聯強國際，並被賦予了一個極具挑戰的任務：開拓澳洲市場。從此，他的人生與澳洲這片“Lucky Country”緊密相連，一待就是整整二十六年。

他在聯強澳洲，從產品經理開始歷練起。在他的帶領下，聯強澳洲的業務規模從一億多澳幣，有機成長到二〇二四年達三十一億澳幣，成為澳洲第一大的資通訊通路商，營收規模躋身全澳洲前120大企業。同時，他的歷練遠不止產品行銷與業務拓展，還包括在雪梨與墨爾本兩大城市，規劃投資建設高度自動化運籌中心；過程中歷經與政府單位及工會打交道的經驗，他學會在一個多元文化（移民國家）的環境中，如何整合來自世界各地、文化信仰與做事方式皆不同的人才，使其能凝聚成一個堅實的團隊。

通路：資訊世界的橋樑與水池

作為一名資深的通路行者，學長將通路商定義為「科技的橋樑」（Synergy Nexus），在複雜的資訊產業供應鏈中，通路商的存在是必要且關鍵的。

王其勳說，原廠就像大戶，如果他們直接面對無數微小的終端使用者或經銷商，光是處理每

個人開帳戶、物流、金流的瑣碎事務，成本就會高到無法負擔。通路商就是一個專業平台，觀念上它承接了原廠的服務外包，向上只要面對兩三家原廠，向下則提供客戶一體式的專業服務。

學長形容通路商像是「蓄水池」，在諸如「雙11」、「黑五」這樣的大促銷前，製造商的產出是有限的。工廠必須提早幾個月將貨物做出來，這些貨物不能堆在工廠裡，而必須由通路商先行承接、儲存、規劃；以便在大促銷時，能及時高效的滿足原廠、經銷商甚至最終消費者的需求。這套複雜的庫存管理系統，也正是AI運算應用的重要場景之一。

學長以其多年的通路專業歷練指出，隨著過去十多年資訊流的通透與速度的加快，傳統通路已被徹底打破，原廠的影響力越來越大。譬如，透過手機開通等技術，原廠甚至對每一台產品的去向都「一清二楚」，這與過去的模糊狀態已截然不同，通路經營模式亦需隨著科技創新動態調整。

AI的迷霧與冷空氣：沒有轉型的空包彈

在演講的後半段，王其勳話鋒一轉，將AI時代的浪潮比喻為：「天上的飛機很熱鬧，地上的這個情形不太一樣」。回憶起八年前，他正在澳洲推動雲端業務平台，當時幾乎沒人懂「雲端」的解決方案，現在AI的情況類似，上層的資金（如NVIDIA的AI Factory）和國家競爭力驅動的投資都在狂熱進行，但地端的應用（落地）卻是「蠻冷的」。

學長強調，AI關鍵的先決條件是數位轉型（Digital Transformation），做AI卻沒有先將資料數位化，亦即數位轉型，就只是空包彈。他指出，多數中小企業缺乏乾淨、經過清洗的Data；當資料庫的Data未經清洗就丟進AI系統，就會導致判斷錯誤。

做AI的最大的關鍵問題還是「人」，當公司導入AI時，員工不免會擔心工作不保；因此，公司在管理上要重新定義員工的角色，讓他們去「指導AI」，而不是做重複性的操作。

最終，學長提醒AI落地不是一蹴可幾，還有很長的路要走，因為它牽涉到人的認知、公司運作模式的改變、資安的投入，以及法規倫理的變革。AI是一個工具，能幫助人做決策，但人始終要做最終的判斷。

這位在資訊通路界耕耘超過四分之一世紀的行者，為資訊系的後輩們勾勒出了一幅宏大而真實的產業畫卷：從底層的晶片到全球的運籌帷幄，從通路模式的變革到AI時代的迷思與務實。王其勳鼓勵同學們，要多交流，開闊自己的眼界，因為在未來的國際化的世界，這將是一個重要的加分項。

Kee Ong and His Journey Through the Transformation of the Digital World

The story of Kee Ong is a chronicle of ambition, resilience, and vision—a journey that began in Taiwan and expanded to the global technology stage. Growing up overseas, Ong developed a keen interest in the emerging field of computer programming during his college years. Acting on his high school teacher's advice, he enrolled in the Computer Engineering program at National Chiao Tung University, even though he barely knew what the discipline entailed. Little did anyone expect that this decision would mark the beginning of his lifelong journey in the world of information technology.

From Junior R&D to Australia's ICT Distribution Powerhouse

After graduation, Ong joined MiTAC, a subsidiary of the MiTAC-Synnex Group, diving headfirst into the world of IT research and development. His early work involved programming microprocessor chips inside PC keyboards—on devices with a mere 256K of memory. To meet tight deadlines for tech expos, he often worked around the clock, going without sleep for days. These grueling experiences honed his technical expertise but also sparked a desire to broaden his horizons.

Opportunity knocked when MiTAC planned to set up a factory in the UK. Ong volunteered for the overseas assignment, which not only changed his location but also transformed his career trajectory—from R&D to product sales and marketing.

In 1998, a twist of fate led him to Synnex Technology International, the MiTAC Group's distribution arm, where he took on the formidable challenge of establishing a foothold in the Australian ICT market. That decision tied his life to the "Lucky Country" for the next 26 years.

Starting as a product manager, Ong steadily climbed the ranks. Under his leadership, Synnex Australia grew from a modest AU\$100 million operation to a staggering AU\$3.1 billion enterprise by 2024, becoming the nation's largest ICT distributor and ranking among Australia's top 120 companies. His responsibilities extended far beyond sales—he spearheaded the development of highly automated logistics centers in Sydney and Melbourne, navigated complex negotiations with government agencies and labor unions, and mastered the art of building cohesive teams in a multicultural environment.

Distribution: The Bridge and Reservoir of the Digital World

As an IT distribution pioneer, Ong defines distributors as the "Synergy Nexus"—the indispensable bridge in the intricate ICT supply chain.

Manufacturers typically operate within large, complex organizations. If they were to manage countless small resellers and end-users directly, they would face two major hurdles: delivering adequate service and absorbing the unsustainable costs of account management, logistics, and financial transactions. This is where distributors play a critical role.

Distributors act as specialized platforms, simplifying complexity and connecting markets. Upstream, they maintain focused relationships with a select group of manufacturers; downstream, they deliver integrated, end-to-end solutions to thousands of customers. In essence, they transform complexity into efficiency.

Ong likens distributors to "reservoirs." Before major shopping events like Singles' Day or Black Friday,

factories must produce goods months in advance. These products cannot pile up in factories—they need distributors to store, schedule, plan, and allocate inventory so that demand surges can be met efficiently. This complex inventory management system is now a prime application for AI-driven analytics.

Drawing on decades of experience, Ong notes that the traditional distribution model has been radically reshaped by the acceleration of information flow. Manufacturers wield increasing influence; technologies like mobile activation tracking allow them to monitor every product's destination with precision—something unimaginable in the past. Consequently, distribution strategies must evolve dynamically with technological innovation.

AI: The Fog and the Chill — Transformation Is Non-Negotiable

In the latter part of his talk, Ong shifts focus to the AI revolution, painting a vivid picture:

"The skies are buzzing with aircraft, but the ground tells a different story."

He recalls introducing cloud solutions in Australia eight years ago—a time when few understood what "cloud" meant. Today, AI faces a similar paradox: at the top, capital investments are surging, driven by initiatives like NVIDIA's AI factories and national competitiveness strategies. Yet at the operational level, adoption remains tepid. The excitement in the stratosphere contrasts sharply with the chill on the ground.

Ong underscores a critical truth: digital transformation is the prerequisite for AI. Implementing AI without first digitizing and cleansing data is like firing blanks. Many small and medium-sized enterprises lack clean, structured datasets; feeding raw, unrefined data into AI systems inevitably leads to flawed or misleading judgment.

But technology is only part of the equation—the real challenge is people. Employees often fear job loss when AI enters the workplace. To succeed, companies must redefine roles, empowering staff to harness AI rather than perform repetitive tasks. This shift transforms AI from a perceived threat into a collaborative tool.

Finally, Ong concludes with a powerful reminder: the journey to AI adoption is not instantaneous—it's a long road that requires commitment and vision. Successful implementation hinges on more than technology; it involves reshaping mindsets, redefining business models, strengthening cybersecurity, and adapting to evolving regulations and ethical standards. AI is not a magic solution—it is a strategic tool designed to empower decision-making. And while AI can provide insights, the ultimate judgment must always rest with people. Embrace this transformation as an opportunity to lead, innovate, and create value for the future.

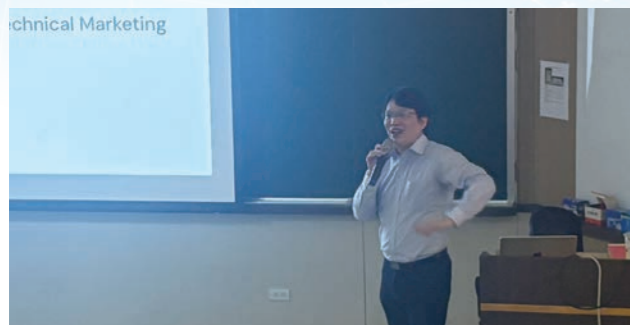
A Vision for the Next Generation

After more than a quarter-century in the ICT distribution arena, Ong paints a vivid and authentic picture of the industry—from chip-level programming to global-scale logistics, from evolving distribution models to the myths and realities of AI. His advice to students:

"Engage, exchange, and broaden your perspective. In tomorrow's globalized world, these qualities will be your greatest advantage."

那些交大教會我的事： 彭念劬學長的人生與 AI 時代的應對之道

文／胡翔祐



彭念劬學長是交大資訊科學系學士 1999 級、碩士 2001 級，他本身的故事就是一部資訊人面對時代浪潮的奮鬥史。在學期間，他曾擔任資訊科學系系學會長、學生會會長，並獲選為大學優秀青年和 YEF 傑訪代表。他甚至在 1994 年代表學校，成為奧林匹亞洲區 ACM 資訊科技培訓選手。然而，這位資工背景深厚的工程師，卻以一句「最討厭硬體了」開始了他的職涯，沒想到第一份工作便是在 IC 設計公司，負責資訊處理與人工智慧相關業務。

在光鮮亮丽的 Intel 工作時，學長過著人人稱羨的「型男飛行日誌」般的生活，憑藉各式貴賓卡，他只要在登機前兩小時趕到機場就一定能搭上飛機。然而，一場與 AppWorks 創辦人邱繼弘學長的對話，徹底改變了他的軌跡。邱學長問他：「你們這樣的軟體人躲在硬體公司，那台灣的軟體怎麼會有未來呢？」雖然學長自認為人生最後悔的兩件事是念博士和創業，因為都逛日費時且 CP 值不高，但他最終選擇「裸辭」，決定出來拼搏。在創立雲深創新後不久，邱繼弘學長因其 AppWorks 業務接下了 Facebook 台灣總代理，每年可創造 20 億元的生意，便將重心轉移，讓彭念劬學長莫名其妙地成為了雲深創新的執行長。

雲深創新行事低調，號稱「雲深不知處」，核心業務在推薦系統的研發與應用，公司的運行領域廣泛，從新聞、商品、影片，到銀行保險商品的推薦，更厲害的是，雲深創新展現了將軟體智慧結合硬體的商業模式，例如著名的寵物攝影機 Furball，其硬體多年不變，卻能靠軟體不斷更新功能，實現臉部辨識、情緒判斷、零食投餵等功能，創造出驚人的年營收。學長指出，台灣的寵物數量已超過新生兒人數，這個市場證明了即使只賣硬體，透過軟體的創新也能賺大錢。除此之外，雲深創新也曾參與 2024 年 12 強棒球賽的資料處理系統—灼見情蒐系統，為賽事提供專業的數據分析服務，更讓台灣成功獲得世界冠軍。

談及創業，學長語重心長地說，千萬不要為了創業而創業，必須先知道如何賺錢，以及你想做什麼事，台灣創業成功率僅 1%，但這並不意味著要迴避挑戰。在快速變化的時代，過去穩定的工作模式已經改變，許多過去的大公司如 Nokia、MSN 都隨時可能倒下，人們努力工作，卻仍可能失業。因此，創業的真正驅動力是內心想做一件事的熱情，無論是想做出一個機器人，還是想做出一個會飛的車，這份熱情是將想法變為現實的唯一途徑。

AI 時代的來臨與應對是學長分享的核心，彭念劬說，AI 時代的處境如同 1995 年 World Wide Web 剛興起時，當時很多人覺得 Internet 沒用，直到 Hyperlink 的出現才改變了世界。AI 的發展也經歷了數次浪潮，從 50 年代的符號邏輯到 80 年代的專家系統，再到現在的深度學習。學長認為，現在 LLM 模型的發展已經進入「戰國時代」，模型互相取用資料進行訓練，答案會越來越相似，如同歷史上的王室「通婚」，這意味著 AI 發展的競爭將進入更深層次的較量。

在 AI 晶片受到限制的困境下，學長提出了一個有趣的觀點：就像過去計算機資源匱乏時，工程師會節省記憶體一樣，當現在中國算力被限制時，他們的演算法反而可能透過「節省算力」而變得更厲害，因為「生命會找到出路的」，因此，也許我們可以「拿美國的硬體，然後學中國的演算法」。

面對這樣的時代，學長給予了資訊系學生最寶貴的忠告：「學招式，不要學招數」他強調，資訊界唯一不變的事，就是永遠都在改變，現在學的知識，十年後一定沒用。因此，重要的不是學會特定的技術，而是要學會方法和系統化學習的能力。即使是像 AI 寫程式或 debug 這樣熱門的話題，學長也提醒我們，資訊系學生的核心價值不在於寫程式或 debug，而在於分析系統瓶頸，定出好的解決方案。他認為，隨著 Spec Driven Development (SDD) 的興起，未來工程師會與 AI 共同定出規格 (spec)，然後交由 AI 完成高品質的程式碼，因為人類寫不出好的規格，AI 寫的程式才會怪怪的。

學長以自身經歷證明了不斷學習的重要性，已經 48 歲的他仍在持續學習 AI，因為資訊人必須「學得多，忘得快」，隨時準備好學習新事物。最後，他鼓勵大家多參加如 YEF 創業比賽，嘗試從不同角度了解世界，並溫暖的提醒所有學弟妹，要善用時間、磨練技能，永遠不要忘記你的熱情。

Lessons from NYCU: Alumnus Nei-Chiung Perng's Life and How to Navigate the AI Era

Alumnus Nei-Chiung Perng, who received his B.S. in Information Science in 1999 and M.S. in 2001 from NYCU (formerly National Chiao Tung University), embodies the journey of a computer scientist navigating the waves of technological change. During his time at school, he served as President of the Information Science Department Student Association and President of the Student Union, and was selected as an Outstanding University Youth and a YEF (Young Entrepreneurs of the Future) representative. He even represented the university as a training athlete for the ACM Asia Regional Programming Contest in 1994. Yet, this engineer with a deep background in computer science surprisingly began his career with the phrase, "I hate hardware the most," only to find his first job was in an IC design company, handling information processing and AI-related tasks.

While working at the prestigious Intel, Perng led a life many envied, reminiscent of "Up in the Air," where he could arrive at the airport just two hours before boarding and still make his flight, thanks to various VIP cards. However, a conversation with AppWorks founder Alumnus Nathan Chiu completely altered his trajectory. Lin asked him, "If software people like you hide inside hardware companies, how can Taiwan's software industry have a future?" Although Perng jokingly regrets that the two biggest regrets in his life are pursuing a Ph.D. and starting a business because both were time-consuming and had a low cost-performance ratio (CP value), he ultimately chose to "bare-bones resign" and decided to fight for his future. Shortly after founding DeepSight Innovation (雲深創新), Nathan Chiu shifted his focus to AppWorks, which became the sole agent for Facebook in Taiwan, generating NT\$2 billion in annual business, thus inadvertently making Nei-Chiung Perng the CEO of DeepSight Innovation.

DeepSight Innovation operates discreetly, earning the nickname "The Cloud is Deep, the Location Unknown" (雲深不知處). Its core business lies in the research and application of recommendation systems. The company's application fields are extensive, ranging from recommendations for news, products, videos, to banking and insurance products. More impressively, DeepSight Innovation demonstrated a successful business model that integrates software intelligence with hardware. For example, their famous pet camera, Furball, has kept the same hardware for years but continuously updates its functions through software—enabling facial recognition, emotion detection, and treat dispensing—achieving astonishing annual revenues. Perng points out that the number of pets in Taiwan now exceeds the number of newborns, proving that even by selling only hardware, one can earn substantial profits through software innovation. Furthermore, DeepSight Innovation participated in the data processing system for the 2024 Premier12 baseball tournament—the "Flamesight Intelligence Gathering System"—providing professional data analysis services that helped Taiwan successfully secure the world championship.

When discussing entrepreneurship, Perng spoke earnestly, advising people not to start a business

just for the sake of it; one must first know how to make money and what one truly wants to do. The success rate for startups in Taiwan is only 1%, but this does not mean avoiding challenges. In this rapidly changing era, the stable job model of the past has vanished; many large companies like Nokia and MSN could collapse at any moment, and people can work hard yet still face unemployment. Therefore, the true driving force for entrepreneurship is the passion to realize an internal goal, whether it's building a robot or a flying car—this passion is the only way to turn an idea into reality.

Navigating the advent of the AI era is the core of Perng's sharing. He compares the current AI situation to the rise of the World Wide Web in 1995, when many people felt the internet was useless until the emergence of the hyperlink changed the world. AI development has also gone through several waves, from symbolic logic in the 1950s to expert systems in the 1980s, and now to deep learning. Perng believes that the development of Large Language Models (LLMs) has entered the "Warring States Period", where models train on each other's data, causing their answers to become increasingly similar, much like historical royal "intermarriage." This signifies that the competition in AI development will enter a deeper, more sophisticated level.

Regarding the constraint on AI chips, Perng offers an intriguing perspective: just as engineers conserved memory when computing resources were scarce in the past, when China's computing power is restricted today, their algorithms may become more powerful through "compute conservation," because "life finds a way." Therefore, perhaps we should "use American hardware and learn Chinese algorithms."

Facing this era, the alumnus offers his most valuable advice to computer science students: "Learn the 'methods', not the 'tricks'." He emphasizes that the only constant in the IT world is change itself; the knowledge learned today will surely be useless in ten years. Therefore, the important thing is not mastering specific technologies but learning methodologies and the ability to learn systematically. Even regarding popular topics like AI coding or debugging, Perng reminds us that the core value of a computer science student is not just writing code or debugging, but analyzing system bottlenecks and determining good solutions. He believes that with the rise of Spec Driven Development (SDD), future engineers will collaboratively define specifications (specs) with AI, and then let the AI complete high-quality code, because "humans can't write good specs, which is why AI-written code often acts weirdly."

Perng's own journey proves the importance of continuous learning; at 48, he is still actively studying AI because IT professionals must "learn quickly and forget quickly," always ready to absorb new things. Finally, he encourages everyone to participate in competitions like the YEF startup contest to try and understand the world from different perspectives, and warmly reminds all his juniors to make good use of their time, sharpen their skills, and never forget their passion.

AI 大語言模型無法馴服 π

文 / 林一平 講座教授

和一個人一生中相關的數字，都可以在圓周率的某一個位數找到。

這是因為圓周率 (π) 是一個無理數，也就是說，它的十進制展開既不終止也不循環，並且其數字序列是隨機的。儘管目前沒有證據能證明圓周率的數字完全隨機，數學家普遍認為圓周率的數字分布沒有任何規律或模式，每個數字序列都有可能在一位數中隨機出現。

這意味著，無論選擇哪個數字組合，包括個人的生日、電話號碼或重要年份等，理論上都能在圓周率的某個位置找到。這些數字可能會在圓周率的某個長段中出現一次或多次，具體位置由數字的隨機分布決定。

這種現象與數學中的均勻分布有關，這表示所有數字 (0~9) 在圓周率的各個位數上出現的機率理論上是相等的。因此，任何有限長度的數字組合都有可能出現在圓周率的某個位置。

以最奇特方式運用圓周率的人，應屬高德納 (Donald Ervin Knuth)。1969 年時他開始發展一種計算機語言，讓使用者能夠以數位方式排版數學公式。接下來高德納花十年功夫，設計一套論文排版系統 TeX，並以圓周率來當開發版本編號，由 TeX3 開始，現在的版本是 TeX 3.141592653。

人類於四千年前就嘗試找出 π ，但直到今日，我們仍然只是接近其實際數值。首次對 π 進行嚴格計算的，是西元前 287 至 212 年的希臘古數學家阿基米德 (Archimedes)，他利用畢達哥拉斯定理計算內接於圓的正多邊形與外接於圓的正多邊形的面積，因為圓的實際面積必然介於這兩者之間，因此這些多邊形的面積提供了圓面積的上、下界。他明白這樣只能得到 π 的近似值，而非其確切數值。透過這種方法，阿基米德推導出 π 介於 3.1429 與 3.1408 之間。

2021 年 8 月 19 日，瑞士格里松應用科技大學 (University of Applied Sciences of the Grisons) 計算出圓周率最精確的數值達 62,831,853,071,796 位數。有趣的是，神奇的 AI 大語言模型無法馴服 π 。我問 7 種大語言模型，卻都給我不同答案。

我詢問和我相關的 4 個數字：「May I ask at which digit position 1026 appears in the digits of pi?」結果每個 LLM 給我的答案都不同。過去

的測試中，總會有幾個 LLM 給出相同的答案，但這次完全沒有共識。

我先試 GPT，得到答案 6284。接著要求 GPT 自我驗證：「What is the four-digit sequence starting at position 6284 in the digits of pi?」結果，得到的回覆是 7590，而非 1026。

我試 Grok，得到的回覆是 1639，反向驗證，也沒得到 1026，而是 5807。

我試 Le Chat (Mistral.ai)，得到的回覆是 176451，反向驗證，得到 3141。

我試 Qwen2.5-Max，得到的回覆是 39，反向驗證，得到 7169。

我試 DeepSeek，得到的回覆是 8580，反向驗證，得到 3099。

我試 Tulu 3，得到的回覆是 2480，反向驗證，得到 3282。

我再試 Gemini，得到的回覆是 175319，反向驗證，他不告訴我答案，建議我找數學工具來算出。

我最後試 Claude，他不告訴我答案。

這些大語言模型給錯答案的原因是，它們試圖自行編寫程式來找答案，但程式未能正確運行。我詢問 Pi-Search 頁面，它回答說：「字串 1026 出現於位置 14678。這個字串在 π 的前 2 億位數字中出現 20,130 次。」這應該是正確答案。我的測試是在 2025 年 2 月 24 日。在告知 GTP 或 Grok 網路上特定數學工具可給答案時，它們的確會認錯，並依我建議，運用工具找到正確答案。

隨著大語言模型的進化，也許未來能在第一次詢問時給出正確答案。



高德納 (Donald Ervin Knuth) 。。
圖 / 林一平繪

Large Language Models Cannot Tame Pi

Any number related to a person's life can be found in a certain digit position of the circumference ratio (π).

This is because pi (π) is an irrational number; that is, its decimal expansion neither terminates nor repeats, and its sequence of digits is random. Although there is currently no proof that pi's digits are completely random, mathematicians generally believe that the distribution of pi's digits follows no pattern or regularity, and every sequence of digits is theoretically possible to appear randomly at some position.

This means that no matter which number combination you choose, including a personal birthday, phone number, or important year, it can theoretically be found at some position in pi. These digits may appear once or multiple times within a long segment of pi, with the specific location determined by the random distribution of the digits.

This phenomenon is related to uniform distribution in mathematics, which suggests that the probability of all digits (0-9) appearing in any digit position of pi is theoretically equal. Therefore, any finite-length combination of digits is possible to appear at some position in pi.

The person who used pi in the most peculiar way must be Donald Ervin Knuth. In 1969, he began developing a computer language that allowed users to digitally typeset mathematical formulas. Knuth then spent ten years designing the TeX document typesetting system and used pi for the version numbering of its development. Starting from TeX3, the current version is TeX 3.141592653.

Humans have been attempting to find π for four thousand years, but even today, we only get closer to its actual value. The first to perform a rigorous calculation of π was the ancient Greek mathematician Archimedes (287–212 BC). He used the Pythagorean theorem to calculate the areas of a regular polygon inscribed in a circle and a regular polygon circumscribed about a circle. Since the actual area of the circle must lie between these two, the areas of these polygons provided the lower and upper bounds for the area of the circle. He understood that this would only yield an approximation of π , not its exact value. Using this method, Archimedes derived that π is between 3.1429 and 3.1408.

On August 19, 2021, the University of Applied Sciences of the Grisons in Switzerland calculated

the most accurate value of pi to 62,831,853,071,796 digits. Interestingly, the marvelous AI Large Language Models cannot tame π . I asked seven different Large Language Models, and they all gave me different answers.

I inquired about four numbers related to me: "May I ask at which digit position 1026 appears in the digits of pi?" The result was that every LLM gave me a different answer. In past tests, a few LLMs would always provide the same answer, but this time there was no consensus whatsoever.

I first tried GPT and got the answer 6284. I then asked GPT to self-verify: "What is the four-digit sequence starting at position 6284 in the digits of pi?" The reply I received was 7590, not 1026.

I tried Grok, and the reply I received was 1639. A reverse check also did not yield 1026, but 5807.

I tried Le Chat (Mistral.ai), and the reply I received was 176451. A reverse check yielded 3141.

I tried Qwen2.5-Max, and the reply I received was 39. A reverse check yielded 7169.

I tried DeepSeek, and the reply I received was 8580. A reverse check yielded 3099.

I tried Tulu 3, and the reply I received was 2480. A reverse check yielded 3282.

I then tried Gemini, and the reply I received was 175319. For the reverse check, it did not tell me the answer but suggested I use a mathematical tool to calculate it.

I finally tried Claude, and it did not tell me the answer.

The reason these Large Language Models gave incorrect answers is that they attempted to write their own program to find the answer, but the program failed to run correctly. I asked the Pi-Search page, and it answered: "The string 1026 appears at position 14678. This string appears 20,130 times in the first 200 million digits of π ." This should be the correct answer. My test was conducted on February 24, 2025. After informing GTP or Grok that a specific online mathematical tool could provide the answer, they indeed admitted the error and, following my suggestion, used the tool to find the correct answer.

With the evolution of Large Language Models, they may be able to provide the correct answer upon the first inquiry in the future.

軍事通訊—說碼人加密

文／林一平 講座教授

軍事通訊技術不斷精進，操作通訊系統的兵種就愈分愈細，最早只要一個旗兵。進入電子戰後，通訊兵的分工還挺細的。

例如話務通訊兵負責發送訊號，而譯電通訊兵負責接收訊號。在體制上雖然是不同功能，但作戰時，可沒有那麼講究排場，話務和電譯就由同一位通訊兵包辦。這個兵種往往腦力操勞，要背誦一堆編碼，防止通訊的內容被竊聽。

如何想出讓敵人無法破解的密碼，更是兵家必爭。第二次大戰時，德國使用 Enigma 加密機，配備於 U-boat 潛艇，行跡飄忽不定，在大西洋擊沉大量盟軍船隻，急得英國首相邱吉爾 (Winston Churchill) 直跳腳。

今日以自然語言 AI 技術模擬通訊者的生物特徵及說話特性，成為加密的金鑰，產生 AI 說碼人系統的發展是一個令人感興趣的領域。模擬通訊者的客製化特性，成為加密的金鑰，軍隊早已採用，是所謂的「說碼人」(Code Talkers) 加密。說碼人其實是話務／譯電通訊兵，不同之處是他們像中國以前秘密幫派，會中兄弟談機密時，就說起「幫派切口」，旁人聽不懂。甲午戰爭時清朝曾以溫州話加密；第一次世界大戰時，美國採用巧克陶族 (Choctaw) 的印第安語傳送機密軍事訊息，成功地攻擊德軍。德、日兩國學到教訓，在第一次大戰後送一堆學生到美國學印第安語如 Cherokee、Choctaw，和 Comanche。美國軍方發現此一現象後，擔心德、日兩國有能力解碼，曾經考慮放棄「說碼人」制度。

此時一位工程師，也是第一次世界大戰的退役軍人江士頓 (Philip Johnston) 建議以鮮為人知的納瓦荷語言來編碼。

江士頓從小生長在納瓦荷印第安保留區，和納瓦荷族人交往，熟悉納瓦荷語言及習俗。納瓦荷的語言結構複雜，較以前的印第安語言更適合用於加密。經過江士頓展示後，美國海軍陸戰隊決定採用這個提案，立即徵召僱用 29 名納瓦荷族原住民，由他們開始編碼工作，總共使用 411 個字彙。海軍陸戰隊在第一層編碼上再以字詞取代 (Word Substitution)，做第二層的加密，例如「Gini」這個納瓦荷字翻成英文是「Chicken

Hawk」，而真正的軍事用語是「俯衝轟炸機」(Dive Bomber)。

第二次大戰期間美國總共動用 400 位納瓦荷族的說碼人，這個密碼一直到大戰結束，都未曾被破解。很諷刺的是，1861 年時，美國白人將最早的旗語通訊用於和納瓦荷族的作戰，而在第二次大戰期間卻靠納瓦荷族來協助美軍進行作戰通訊，編入美國海軍陸戰隊。

2002 年電影《獵風行動》敘述 1944 年，美軍在太平洋塞班島戰場上，納瓦荷族說碼人的故事。這部電影點出很基本的人性問題。軍方必須全力保護「加解密機」，可是當說碼人這個「人肉加解密機」有落入敵人手中的疑慮時，必須先行毀滅。奉命執行毀滅任務的同胞如何下得了手？這個矛盾成為電影詮釋的重點。

當前科技發展已經實現加密的自動化和數據化，不再需要人工的介入。然而，利用自然語言人工智慧 (AI) 技術來模擬通訊者的生物特徵和說話特性，作為加密的金鑰，這是否能夠強化加密的效果呢？AI 說碼人系統的發展是一個引人注目的領域。通過應用自然語言處理和機器學習技術，AI 能夠模擬通訊者的生物特徵和說話風格，成為加密的關鍵。

然而，要建立一個全面且安全的說碼人系統，需要深入瞭解特定語言、方言以及文化背景。此外，發展強大且安全的通訊系統還需要考慮超越僅透過文字互動可以實現的因素。目前，AI 說碼人系統的發展仍需更多的研究和努力。



林一平
國立陽明交通大學資工系終身講座教授暨華邦電子講座

現為國立陽明交通大學資工系終身講座 教授暨華邦電子講座，曾任科技部次長，為 ACM Fellow、IEEE Fellow、AAAS Fellow 及 IET Fellow。研究興趣為物聯網、行動計算及系統模擬，發展出一套物聯網系統 IoTalk，廣泛應用於智慧農業、智慧教育、智慧校園等領域 / 場域。興趣多元，喜好藝術、繪畫、寫作，遨遊於科技與人文間自得其樂，著有 < 閃文集 >、< 大橋驟雨 >。

Military Communication – Code Talker Encryption

Military communication technology is constantly advancing, leading to increasingly specialized roles for soldiers operating communication systems, starting from just a single flag bearer. Following the entry into electronic warfare, the division of labor among communication soldiers became quite detailed.

For instance, a Voice Communication Soldier is responsible for transmitting signals, while a Code Translation Soldier (or Crypto Soldier) is responsible for receiving signals. Although these are distinct functions within the system, in real combat situations, such formalities are often disregarded, and both voice communication and translation are handled by the same soldier. This role often involves intense mental strain, requiring the memorization of numerous codes to prevent communication content from being intercepted.

Devising codes that the enemy cannot break is a military imperative. During World War II, Germany used the Enigma machine aboard U-boats. Their unpredictable movements sank a large number of Allied ships in the Atlantic, causing British Prime Minister Winston Churchill great alarm.

Today, the development of an "AI Code Talker" system, which uses Natural Language AI technology to simulate a communicator's biometric characteristics and speaking traits as an encryption key, is an interesting area of study. The concept of customizing a communicator's characteristics to serve as an encryption key has long been adopted by the military, known as the "Code Talkers" encryption. Code Talkers were essentially the Voice/Code Translation Soldiers, but the difference was that they acted like members of secret Chinese gangs of the past, who would speak in a "gang dialect" (幫派切口) when discussing secrets among brothers, making it incomprehensible to outsiders. During the Sino-Japanese War, the Qing Dynasty used Wenzhounese as a form of encryption. In World War I, the US successfully attacked German forces by using the Choctaw Native American language to transmit secret military messages. Germany and Japan learned this lesson and sent many students to the US after WWI to learn Native American languages such as Cherokee, Choctaw, and Comanche. The US military, upon discovering this, became concerned that Germany and Japan might be able to decrypt the messages and considered abandoning the "Code Talkers" system.

At this time, an engineer and WWI veteran, Philip Johnston, suggested encoding messages using the little-known Navajo language.

Johnston grew up in the Navajo Indian Reservation, interacted with the Navajo people, and was familiar with their language and customs. The complex structure of the Navajo language made it more suitable for encryption than the previously used Native American languages. After Johnston's demonstration, the US Marine Corps decided to adopt the proposal, immediately recruiting 29 Native Navajo men to begin the coding work, using a total of 411 vocabulary words. The Marine Corps implemented a second layer of encryption on top of the first coding layer using Word Substitution. For example, the Navajo word "Gini"

translates to "Chicken Hawk" in English, but the actual military term it represented was "Dive Bomber."

During WWII, the US employed a total of 400 Navajo Code Talkers. This code was never broken until the end of the war. Ironically, in 1861, white Americans first used flag-based communication in battles against the Navajo, only to rely on the Navajo people to assist US military communication and be integrated into the US Marine Corps during World War II.

The 2002 film "Windtalkers" tells the story of the Navajo Code Talkers during the Battle of Saipan in the Pacific in 1944. This movie highlights a fundamental human dilemma. The military must protect the "encryption/decryption machine" at all costs, but when there is a risk of the Code Talker—the "human encryption/decryption machine"—falling into enemy hands, they must be preemptively destroyed. How could a comrade ordered to execute this destruction carry out the command? This contradiction becomes the central focus of the film's interpretation.

Current technological advancements have enabled the automation and digitization of encryption, eliminating the need for human intervention. However, utilizing Natural Language Artificial Intelligence (AI) technology to simulate a communicator's biometric characteristics and speaking traits as an encryption key—could this strengthen the effect of encryption? The development of AI Code Talker systems is a compelling area. By applying natural language processing and machine learning techniques, AI can simulate a communicator's biometrics and speaking style, becoming the key to encryption.

Nevertheless, establishing a comprehensive and secure Code Talker system requires a deep understanding of specific languages, dialects, and cultural backgrounds. Furthermore, developing robust and secure communication systems requires considering factors that extend beyond what can be achieved through text-only interaction. Currently, the development of AI Code Talker systems still requires more research and effort.

Dr. Jason Yi-Bing Lin

Lifetime Chair Professor of the Department of Computer Science at National Yang Ming Chiao Tung University and Winbond Chair Professor

Dr. Lin is currently a lifetime chair professor of the Department of Computer Science at National Yang Ming Chiao Tung University and Winbond chair professor. He is an ACM Fellow, IEEE Fellow, AAAS Fellow and IET Fellow. His research interests include Internet of Things, mobile computing, and system simulation. He has developed an Internet of Things system called IoTalk, which is widely used in smart agriculture, smart education, smart campus, and other fields. He has a variety of interests, such as art, painting, and writing, as well as voyaging through science, technology, and humanities.

聖路易斯華盛頓大學 Roch Guérin 教授演講 A Brief (Machine Learning) Foray at the Edge of Computing

文／白文怡



114年6月9日交大資訊學院邀請聖路易斯華盛頓大學 (Washington University in St. Louis) 電腦科學與工程系 Roch Guérin 博士蒞校交流並演講。Roch Guérin 博士 2013 年加入聖路易斯華盛頓大學，為現任 Harold B. and Adelaide G. Welge 講座教授兼電腦科學與工程系系主任。他曾於 1998 年 10 月起擔任賓州大學電機與系統工程 Alfred Fitler Moore 電信網路講座教授。加入賓大之前，他在 IBM T. J. Watson 研究中心擔任技術與管理職務長達 12 年。2001 至 2004 年，他創立 Ipsum Networks，該公司首創 IP 網路路由分析的概念。Guérin 博士於 Caltech 獲得博士學位，並在法國國立高等電信學院 (ENST) 完成大學學業。他是 ACM (2006 年) 與 IEEE (2001 年) 的院士，曾任 IEEE/ACM 《Transactions on Networking》主編及 ACM SIGCOMM 主席。1994 年，他因流量管理研究獲得 IBM Outstanding Innovation Award；2009 年獲得 IEEE TCCC Outstanding Service Award；2010 年因對網路品質 (QoS) 理論與實務的開創性貢獻，榮獲 INFOCOM Achievement Award 及最佳論文獎。

網路覆蓋日益廣泛、嵌入式裝置運算能力持

續提升，以及對於「將運算推向資料產生地端」的需求快速增長，邊緣運算解決方案正蓬勃發展。許多應用場景，特別是人工智慧與機器學習，正成為其主要驅動力。本次演講主題聚焦於邊緣運算與機器學習的結合，特別探討兩個前沿專案：

專案一 "Optimizing Edge Offloading Decisions for Object Detection."：在物件偵測場景中，本地裝置與邊緣伺服器協作。在伺服器負載受限下，設計智慧策略判定哪些影像需上傳，並透過在嵌入式裝置上執行的預估機制，量化單張影像對偵測準確性的提升，實驗結果顯示該方法有效。

專案二 "Progressive Neural Compression for Adaptive Image Offloading Under Timing Constraints."：針對物件分類，攝影機需透過無線頻寬不穩定網路上傳影像，設計自適應傳輸策略以最大化分類準確度。透過在訓練類神經網路壓縮算法時加入隨機「尾端丟棄」(stochastic tail-drop) 技術，並在本地測試平台驗證其效能。

最後，Guérin 博士分享他運用機器學習解決複雜優化問題的心得，展現該技術作為強大工具的潛力與實務價值。

Prof. Roch Guérin from Washington University in St. Louis, USA: A Brief (Machine Learning) Foray at the Edge of Computing

On June 9, 2025, the College of Computer Science at National Yang Ming Chiao Tung University welcomed Dr. Roch Guérin from the Department of Computer Science and Engineering at Washington University in St. Louis for an academic exchange and invited lecture. Professor Roch Guérin is the Harold B. and Adelaide G. Welge Professor and Chair of Computer Science and Engineering at Washington University in Saint Louis, which he joined in 2013. He previously was the Alfred Fitler Moore Professor of Telecommunications Networks in the Electrical and System Engineering department of the University of Pennsylvania, which he joined in October 1998. Prior to joining Penn, he spent 12 years at the IBM T. J. Watson Research Center in a variety of technical and management positions. He started Ipsum Networks between 2001 and 2004, a company that pioneered the concept of route analytics for managing IP networks. Dr. Guerin received his Ph.D. from Caltech and did his undergraduate at ENST in France. He is an ACM and IEEE Fellow. He served as the Editor-in-Chief for the IEEE/ACM Transactions on Networking and as the Chair of ACM SIGCOMM. In 1994 he received an IBM Outstanding Innovation Award for his work on traffic management. He received the IEEE TCCC Outstanding Service Award in 2009 and was the recipient of the 2010 INFOCOM Achievement Award for "Pioneering Contributions to the Theory and Practice of QoS in Networks."

Edge computing solutions have proliferated, fueled by a combination of increased network ubiquity, advances in computing, especially in embedded devices, and by the growing need to bring computations closer to where data is produced. Many of those scenarios are driven by machine learning applications. In this talk, Dr. Guerin

discussed two projects, both motivated by edge computing machine learning applications, and for which machine learning was itself instrumental in devising an efficient solution.

1. The first project, "Optimizing Edge Offloading Decisions for Object Detection," targeted object detection with local and edge compute resources cooperating to optimize detection accuracy under load constraint on the edge server. Under such a constraint, the goal is to devise a simple policy to decide which images to offload to the edge server while maximizing detection accuracy. This calls for a metric that quantifies improvements in overall detection accuracy from offloading an individual image, and an estimator for that metric that can run on embedded devices. The benefits of the approach are evaluated experimentally.

2. The second project, "Progressive Neural Compression for Adaptive Image Offloading Under Timing Constraints," dealt with an object classification problem where a camera is uploading images to an edge server for classification. The wireless network used to upload successive images is, however, subject to bandwidth fluctuations. This requires an adaptive transmission strategy to maximize inference accuracy, irrespective of the amount of data that can be transmitted for each image. We realize this through a simple application of stochastic tail-drop when training a neural compression algorithm and demonstrate the efficacy of the approach on a local testbed.

Dr. Guerin concluded the talk with a brief reflection on his experience with machine learning as a (powerful) tool for solving complex optimization problems.



加拿大英屬哥倫比亞大學 Peter Yichen Chen 博士演講： Neural PDE AI-Enhanced Physics Simulation

文／劉育綸教授

由劉育綸教授邀請並主持，加拿大英屬哥倫比亞大學 (University of British Columbia, UBC) PhysAI 實驗室主持人 Peter Yichen Chen 博士，近期發表了一場題為「Neural PDE: AI-Enhanced Physics Simulation」的專題演講，帶領與會者一同探索人工智慧與物理模擬交會的新前沿，並分享其研究團隊在這一領域的最新突破。

陳博士在演講一開始便提出引人深思的問題：如果我們能精準描繪颱風的行進路徑、即時模擬新藥在人體內的反應，甚至設計出更安全、更高效的飛機，這將如何改變人類的生活？這些願景的背後，都依賴於強大的物理模擬技術。如今，物理模擬已被視為現代科學的「第三支柱」，與理論推導和實驗觀測並駕齊驅，在理解自然與推動應用方面扮演著不可或缺的角色。

長久以來，科學家主要依靠兩種截然不同的方法進行物理模擬。第一種是「古典派」，以牛頓、愛因斯坦等人的理論為基礎，透過偏微分方程式等數學形式描述自然現象，如同一本物理學的說明書，能嚴謹地推演世界的運作。然而，這樣的方法雖然可靠，但往往需要大量運算與深厚數學基礎。第二種方法則是近年快速崛起的「資料派」，透過人工智慧神經網路從龐大的觀測數據中自行歸納規律，就像電腦看過成千上萬張照片後，能自動學會分辨貓的模樣。資料驅動的方法具備速度與靈活性，但當面臨全新或未曾出現過的情境時，往往難以給出合理的預測。

面對這兩條路徑的侷限，陳博士提出了解方：將物理定律與人工智慧結合，打造出「混合模擬系統」。在這樣的架構中，物理定律成為人工智慧的學習指南，也就是所謂的「歸納偏置」，使得 AI 不再只是死記硬背數據，而能真正理解背

後的原理。這就像給學生的不僅是考古題，更是一本幫助掌握知識結構的教科書，使其能在陌生的問題面前依然做出合理判斷。

這種混合模式展現出驚人的優勢。首先，它能夠更準確地捕捉傳統方程式難以涵蓋的細節，使模擬結果更貼近現實。其次，它大幅提升了模擬效率，原本需要超級電腦數日才能完成的運算，現在可能只需數小時。最後，它大幅降低了使用門檻，讓非物理或數學專業背景的研究者，也能輕鬆運用這些工具。這樣的發展，不僅為基礎科學研究帶來新的契機，也使跨領域的應用成為可能。

陳博士強調，混合模擬不僅是技術上的突破，更可能徹底改變科學探索的格局。從氣候變遷的研究，到藥物設計與人體模擬，從新材料的探索到航太工程的創新，這一方法都展現出廣泛而深遠的應用潛力。它讓我們能以前所未有的速度與精度理解自然，並在實際應用中發揮實質影響。

陳博士現任 UBC 電腦科學系助理教授，並主持 PhysAI Lab，曾於麻省理工學院 CSAIL 擔任博士後研究員，博士學位取得於哥倫比亞大學，更早之前於 UCLA 攻讀數學並榮獲 Sherwood Prize。他的研究跨足電腦圖學、機器學習、科學計算、力學與機器人學，致力於推動 3D 內容創作、工程設計控制及材料探索，成果屢獲國際肯定，包括 SIGGRAPH 最佳論文獎。此次由劉育綸教授邀請並主持的專題演講，不僅展現了 AI 強化物理模擬的最新進展，也凸顯跨領域合作的重要性。隨著這一方向持續推展，學界與產業界正迎來一個更快、更準確、更普及的模擬時代，正如陳博士所描繪的願景：混合物理與資料的模擬系統，正為科學研究開啟新紀元。

Speech by Dr. Peter Yichen Chen from the University of British Columbia: Neural PDE: AI-Enhanced Physics Simulation

Invited and hosted by Professor Yu-Lun Liu, Dr. Peter Yichen Chen, Assistant Professor in the Department of Computer Science at the University of British Columbia (UBC) and Director of the PhysAI Lab, recently delivered a keynote lecture titled "Neural PDE: AI-Enhanced Physics Simulation." In his talk, Dr. Chen guided participants to the emerging frontier at the intersection of artificial intelligence and physics simulation, sharing the latest breakthroughs from his research team in this domain.

Dr. Chen began his lecture with a thought-provoking question: What if we could precisely predict the trajectory of a typhoon, simulate in real time how a new drug interacts within the human body, or design safer and more efficient aircraft? Such possibilities, he emphasized, all depend on powerful physics simulation technologies. Today, physics simulation is widely regarded as the "third pillar" of modern science—standing alongside theoretical derivation and experimental observation—as an indispensable tool for understanding nature and driving applications.

For decades, scientists have relied on two distinct approaches to physics simulation. The first, the "classical" approach, is rooted in the theories of Newton, Einstein, and others, employing mathematical formalisms such as partial differential equations to describe natural phenomena—like a handbook of physics that rigorously explains how the world works. While reliable, this method demands intensive computation and deep mathematical expertise. The second, the "data-driven" approach, has surged in recent years, leveraging neural networks to extract patterns directly from massive observational datasets. Much like how a computer trained on millions of images can recognize a cat, data-driven methods offer speed and flexibility. However, when faced with entirely new or unseen scenarios, they often fail to provide robust predictions.

To overcome these limitations, Dr. Chen proposed a solution: combining physical laws with artificial intelligence to create "hybrid simulation systems." In this framework, physical laws serve as inductive biases that guide AI learning, ensuring that the models do more than memorize data—they also capture underlying principles. This is akin to giving

students not just practice tests, but also a textbook that helps them grasp conceptual structures, enabling them to make sound judgments even in unfamiliar contexts.

This hybrid paradigm demonstrates striking advantages. First, it captures fine-grained details that traditional equations struggle to model, making simulations more realistic. Second, it dramatically boosts efficiency—computations that once required days on a supercomputer can now be performed in hours. Third, it lowers the barrier to entry, empowering researchers without specialized backgrounds in physics or mathematics to leverage these tools effectively. Such progress not only opens new opportunities for fundamental science but also accelerates cross-disciplinary applications.

Dr. Chen emphasized that hybrid simulation is more than just a technical advance—it may fundamentally transform the way scientific discovery is pursued. From climate change studies and drug design to human modeling, new materials research, and aerospace innovation, this approach holds vast potential. It enables unprecedented speed and accuracy in understanding nature, while also producing tangible real-world impact.

Currently an Assistant Professor at UBC and Director of the PhysAI Lab, Dr. Chen previously conducted postdoctoral research at MIT CSAIL. He earned his Ph.D. in Computer Science from Columbia University and earlier studied mathematics at UCLA, where he received the Sherwood Prize. His research spans computer graphics, machine learning, scientific computing, mechanics, and robotics, with a focus on advancing 3D content creation, engineering design and control, and materials discovery. His contributions have received international recognition, including the Best Paper Award at SIGGRAPH.

This special lecture, hosted by Professor Yu-Lun Liu, not only showcased the latest advances in AI-enhanced physics simulation but also highlighted the importance of interdisciplinary collaboration. As this line of research continues to develop, both academia and industry are stepping into a new era of faster, more accurate, and more accessible simulation—realizing the vision Dr. Chen outlined: hybrid physics-data simulation systems opening a new chapter in scientific exploration.

EMI 助教實務工作坊

文／陳柏丞 英教所碩士生



因應高等教育國際化的趨勢，並提升 EMI (English as a Medium of Instruction) 教學助理在全英課室中的實務能力，國立陽明交通大學資訊學院雙語推動小組於 113 學年度下學期舉辦了《EMI 助教實務工作坊》，旨在提供 EMI 課程助教或未來有意擔任 EMI 課程助教的學生，提升其在全英教學環境中的有效溝通技能與自信心。本次工作坊由國立陽明交通大學國際高教培訓暨認證中心 (HEAT) 的 EMI Specialist 薛詠文老師 (Wendy) 主講，內容聚焦於以下三大面向：建立新 EMI 心態、精進課中輔導技巧、培養高階思考能力。

在建立「新 EMI 心態」方面，薛老師強調了從傳統講述教學轉向以學生為主體 (Student-Centered) 的重要性，並說明授課者應提供學生更多的說話機會 (Increasing Student Talking Time)，透過多元的溝通方式，鼓勵學生主動參與學習，而非僅是老師單方向地傳遞知識。

「課中輔導」具體探討了「概念解釋 (Explaining Concepts)」與「引導課堂討論 (Guiding Class Discussions)」的實用技巧。在概念解釋方面，強調了以「易於理解的英文 (Plain English)」來闡述專業概念的重要性，實用技巧有轉換詞性、使用近反義詞、概念具象化等。至於引導討論，薛老師讓參與者學習如何從傳統的「教師發起 - 學生回應 - 教師回饋 (Initiation-Response-Feedback, IRF)」上課模式，轉變為鼓勵「同儕溝通 (Peer Communication)」與「學生間互動 (Student-Student-Interaction)」的討論設計，培養學生表達贊同或反對、澄清疑點、提出問題、描述因果關係、分享及解釋意見、預測結果與提出解決方案等關鍵溝通技能。

在最後，薛老師也分享如何應用「布魯姆分類學 (Bloom's Taxonomy)」來設計問題，進而發展學生「高階思考 (Higher-order Thinking)」的能力。從傳統的口語互動問題，轉變為設計能夠激發學生進行分析 (Analyze)、應用 (Apply)、評估 (Evaluate) 與創造 (Create) 等更深層次認知技能的 EMI 課室討論問題，而不再是設計僅有記得 (Remember)、理解 (Understand) 這類屬於較低認知技能的問題。

根據問卷統計結果，本次的 EMI 助教實務工作坊成功吸引了 15 人參與。統計結果指出，本次工作坊幫助參與者更了解 EMI 助教的工作的平均滿意度約為 4.4 分 (滿分 5 分)。參與者也認為本次工作坊對於他們未來擔任 EMI 助教具有很大的幫助，平均滿意度約為 4.3 分 (滿分 5 分)。

參與者在回饋中也分享了許多寶貴的建議，例如日後他們希望能參與「增進英文能力」或「增進英文口說用字」的課程，以及多體驗「使用英文溝通交流」的環境，顯示出學生對提升英語口說與溝通能力的需求。此外，也有參與者希望了解更多關於「如何引導討論」或「如何處理班級人數眾多時，解釋並引導學生表達意見和想法」的策略。部分參與者也建議，「如果能讓擔任不同全英授課的助教交流，將會很有幫助，因為可以分享課程上的活動設計或經驗交流」。

整體而言，本次《EMI 助教實務工作坊》為陽交大有志或現任的 EMI 助教提供了寶貴的實務訓練，並獲得了參與者的高度肯定。未來，資訊學院雙語推動小組將參考以上建議，持續優化工作坊內容與活動方式，提供更優質的 EMI 助教培訓環境，培養更多具國際競爭力的教學輔助人才。

EMI-TA Workshop

In response to the trend of internationalization in higher education and the enhancement of the practical competencies of EMI (English as a Medium of Instruction) teaching assistants in English-mediated classrooms, the Bilingual Education Task Force Team of the College of Computer Science, National Yang Ming Chiao Tung University, held the "EMI-TA Workshop" in the second semester of Academic Year 113. The workshop aimed to equip current and prospective EMI TAs with effective communication skills and self-confidence in the English-speaking teaching environment. The workshop was delivered by Wendy Hsueh, an EMI Specialist at the Higher Education Accreditation for Teaching (HEAT) at NYCU. The session centered on three focal areas: establishing a new EMI mindset, refining in-class support strategies, and cultivating higher-order thinking skills.

In terms of establishing a new EMI mindset, the lecturer emphasized the importance of shifting from traditional lecture-based teaching to a student-centered approach, and suggested that instructors should provide student with more opportunities to speak, thereby increasing Student Talking Time (STT). Instructors should apply diverse communication methods to encourage students to actively participate in learning, rather than just teachers passing on knowledge in one direction.

Refining in-class support strategies specifically explores the practical techniques of "Explaining Concepts" and "Guiding Class Discussions." In explaining concepts, the focus is on using "Plain English" to clarify professional concepts in each discipline through strategies, such as changing word forms, using synonyms and antonyms, and providing examples to concretize abstract concepts. As for guiding class discussions, participants were guided to learn how to change from the traditional "Initiation-Response-Feedback (IRF)" class model to a discussion design that encourages "peer communication" and "student-student-interaction." This approach cultivates key communicative skills, including expressing agreement or disagreement, clarifying unclear points, raising questions, describing cause and effect, sharing and explaining opinions, predicting outcomes, and proposing solutions.

Finally, the lecturer demonstrated how to apply "Bloom's Taxonomy" to design questions that develop students' higher-order thinking. Rather than designing questions that only focus on lower cognitive skills such as Remember and Understand,

EMI classroom discussion questions should aim to stimulate students to engage in deeper cognitive skills such as Analyze, Apply, Evaluate, and Create.

According to the survey, this workshop successfully attracted a total of 15 participants. Results indicated an average satisfaction score of approximately 4.4 out of 5 regarding how this workshop helped participants better understand the responsibilities of EMI TAs. Participants also found this workshop to be highly beneficial to their future careers as EMI TAs, with an average satisfaction score of about 4.3 out of 5.

Participants also shared many valuable suggestions in their feedback. For example, they expressed interest in future sessions that focus on "improving English proficiency," "enhancing English speaking vocabulary," and having more opportunities to practice "using English for communication." Their feedback reflected a clear need to strengthen oral proficiency and communicative competence. In addition, some participants hoped to learn more strategies, such as "how to lead discussions" and "how to explain and guide students to express their opinions and ideas in large classes." Several also suggested that it would be beneficial to create opportunities for TAs from different EMI courses to exchange experiences and activity designs.

Overall, the "EMI-TA Workshop" provided valuable hands-on training for current and prospective EMI TAs at NYCU, and received highly positive recognition from the participants. In the future, the CS Bilingual Education Task Force Team will continue to refine workshop content and delivery based on the feedback in order to provide a higher-quality EMI-TA training environment and enable EMI TAs to be more internationally competitive.



跨越國界的學習旅程

ETH Zurich 交換經驗分享

文稿整理／林珮雯



本院資工系李杰穎同學於大學部就讀期間，於 2024 年 9 月至 2025 年 2 月前往瑞士蘇黎世聯邦理工學院（ETH Zurich）進行為期一學期的交換學習。ETH Zurich 為全球頂尖的理工大學，素以嚴謹的學風與卓越的研究能量聞名，愛因斯坦亦曾於此就讀。此次國外交換經驗對李同學的學術視野與研究興趣帶來深刻啟發，也促使他目前進入本院資訊工程研究所博士班，朝向學術研究之路邁進。

陽明交大資訊學院自 2013 年與 ETH Zurich 簽訂交換生合約，每年選送一至二位大學部學生赴該校交換，雙方建立了長期而穩固的合作關係，讓學生有機會在國際一流學術環境中學習與交流。李同學便是這項計畫的參與者之一。

李同學表示，選擇在大學期間出國交換，主要是希望在未來申請國外研究所或博士班前，先行體驗國際學術環境與生活。同時，也期待透過參與課程與專案，認識教授與研究人員，為未來的學術發展奠定基礎。

在課程方面，ETH 的教學設計兼具理論與實務，課堂彈性高，學生可在修課初期自由調整選課與考試安排。本次修習的 Computer Graphics 課程令李同學印象深刻。課程不僅在內容與架構上完整，最後更舉辦了 rendering competition，要求學生以自製的 renderer 呈現自建的 3D 模型，並依照演算法設計難度、模型精美度與主題契合度等面向進行評比。李同學所在的團隊成功進入決賽，雖未奪獎，但能在世界頂尖的學術殿堂展示作品，已是難能可貴的經驗。

生活方面，李同學入住位於蘇黎世富人區 Zollikon 的學生宿舍。宿舍環境清幽、交通便利，並聚集許多來自世界各地的交換學生。在瑞士高物價環境下，他也首次學會自行烹飪，從零開始摸索，竟意外發現「下廚」不僅能節省開銷，更帶來極大的成就感。這段經驗成為交換生活中最難忘的部分之一。

回顧這五個月的學習與生活，李同學表示自己收穫良多。在 ETH 嚴謹的學術氛圍中，他得以接觸到國際一流的前沿知識，開拓了專業眼界；同時，與來自不同文化背景的學生朝夕相處，也讓他建立起跨文化的友誼與人脈。交換過程中，語言表達與跨國交流的能力不斷被磨練，而在日常生活裡，從學會下廚到自我管理，他更培養了獨立生活與解決問題的能力。這段經驗不僅帶來學術上的啟發，也讓他親身體驗歐洲的多元文化，視野與心境都更加寬廣。

李同學建議未來有志出國交換的同學，務必事先做好充分準備，包括語言能力、經濟規劃與心理調適。他特別提醒瑞士消費較高，但透過自行下廚、購買交通月票與 Half-fare Card，都能有效減少開銷；同時，積極參與當地學生組織（如 ESN）活動，也能大幅拓展社交圈。

「保持開放心態，把挑戰與機會都當作學習的一部分，才能真正從交換中獲益。」李同學如此分享。這段短暫卻充實的學習旅程，不僅讓他更堅定未來投身國際學術的決心，也為個人成長留下深刻的印記。

Crossing Borders in Learning: Exchange Experience at ETH Zurich

During his undergraduate studies in the Department of Computer Science, Jie-Ying Lee spent a semester abroad at ETH Zurich, Switzerland, from September 2024 to February 2025. ETH Zurich is one of the world's top universities in science and engineering, renowned for its rigorous academic standards and outstanding research achievements. Albert Einstein himself once studied there. The exchange experience profoundly inspired Lee's academic perspective and research interests, and he is now pursuing a Ph.D. at the Institute of Computer Science and Engineering, College of Computer Science, NYCU, continuing on the path toward academic research.

Since 2013, the College of Computer Science at NYCU has maintained a student exchange agreement with ETH Zurich, sending one to two undergraduate students each year. This long-standing partnership provides students with the valuable opportunity to study and immerse themselves in a world-class academic environment.

The student shared that the motivation for joining an exchange program during undergraduate studies was to experience life abroad before applying for graduate or doctoral programs overseas. In addition, participating in projects and connecting with professors and researchers offered a chance to build academic ties that could benefit future career development.

Academically, ETH Zurich's teaching approach emphasizes both theory and practice, with a flexible course system that allows students to adjust course selections and exam registrations in the early weeks of the semester. Among the courses taken, Computer Graphics left a particularly strong impression. Beyond its well-structured curriculum and assignments, the course culminated in a rendering competition, where students created their own renderers and used them to generate original 3D models. Entries were judged on algorithmic design, model quality, and thematic relevance. The student's team successfully advanced to the finals; although they did not win, the chance to present their work at one of the world's leading institutions was a

memorable and rewarding experience.

Outside of academics, the student lived in a dormitory in Zollikon, a quiet residential area in Zurich. The dorm offered convenient access to public transportation and supermarkets, and its international student community made it easy to make new friends. Faced with Switzerland's high living costs, the student also learned to cook for the first time—discovering that cooking not only saved money but also brought a sense of accomplishment, turning daily meals into one of the most enjoyable aspects of exchange life.

Reflecting on the five months abroad, the student described the experience as profoundly enriching. In ETH's rigorous academic environment, they gained exposure to cutting-edge knowledge and broadened their professional perspective. Living and studying alongside peers from diverse cultural backgrounds fostered international friendships and networks, while language and cross-cultural communication skills improved significantly. On a personal level, everyday challenges—such as learning to cook and managing life independently—helped cultivate problem-solving abilities and resilience. This journey was not only academically inspiring but also an immersion into Europe's rich cultural diversity, greatly expanding both outlook and mindset.

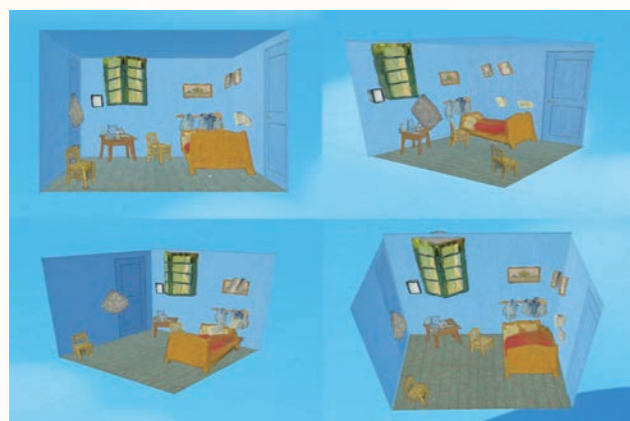
The student encouraged future exchange applicants to prepare thoroughly in advance, including strengthening language skills, budgeting, and mental readiness. They noted that while Switzerland's living costs are high, cooking at home, purchasing transportation passes, and using the Half-Fare Card can reduce expenses. Active participation in student organizations such as ESN is also an excellent way to expand social connections.

"Keep an open mind and treat both challenges and opportunities as part of the learning process—that's how you truly gain from the exchange experience," the student reflected. This short yet transformative journey not only reinforced the determination to pursue an academic career on the international stage but also left a lasting impact on personal growth.

資訊工程專題優秀成果精選

文稿整理／王凱俐、林珮雯

在本院師生的共同努力下，資訊工程專題成果屢獲肯定。去（113）年度，黃敬群教授指導之吳宜靜同學，以及吳毅成教授指導之陳妍沂同學，雙雙榮獲國家科學及技術委員會「113 年度大專學生研究計畫研究創作獎」，展現本院學生在研究與創作上的卓越實力。今年，我們特別節錄部分優秀專題作品加以介紹，延續專題成果的光榮傳統，亦期待激勵更多同學投入創新研究。



特優

專題題目：

Bringing Paintings to Life: 3D Scene Generation from Artistic Paintings

學生姓名：蔡芳慈、陳奕

指導教授：林文杰

專題介紹：

本研究開發了一套自動化系統，能夠在短時間內將各類畫作轉換為 3D 虛擬實境 (VR) 場景。系統整合語意分割、深度估計、圖像補全等多項 AI 模型，並透過 Triplane Gaussian Splatting 技術進行 3D 重建，還原畫作的空間層次。最終，自動化匯入 Unity 引擎，生成可自由探索的 VR 場景。整體系統不需人工建模，即可在 60 分鐘內完成一個 3D VR 場景的生成。使用者能自由漫遊於各種畫作風格的虛擬世界，體驗融合視覺藝術與空間感知的創新互動方式。本研究可廣泛運用在文化保存、遊戲開發與藝術推廣領域。

特優

專題題目：

Multi-Drones Automatically Pick & Place

學生姓名：張家睿、陳晉祿、黃皓君

指導教授：陳奕廷

專題介紹：

在人類無法或不宜直接進入的危險環境，例如高溫火場，自主無人機能代替人員快速偵察、投遞急需物資與回傳資訊，降低救援風險並爭取黃金救援時間。我們的內容有自動化無人機系統，多機協同控制技術，精準 pick & place，比較特別的地方，是因應我們的使用場景，這裡使用室內定位，而非 GPS。除了研究之外，我們參加了 Singapore Amazing Flying Machine Competition，HCIS Lab 與陽交大無人機社及創客社合作，成功在 D2 組獲得了第四名的成績。在過程中我們建立模擬環境，實現 4 臺無人機同時 pick & place，並且部分功能有成功應用在真實世界中。

優等

專題題目：

Gaussians Harmonizer: Recolorization for Consistent Appearance in Composite 3D Gaussian Splatting Scene

學生姓名：李宗諺、楊宗儒

指導教授：劉育綸

專題介紹：

我們針對三維高斯潑灑 (3D Gaussian Splatting, 3DGS) 場景合成中出現的視覺不和諧問題提出解決方案。當將 3DGS 所渲染的物體直接插入現有場景時，常因光照與顏色不一致而產生明顯的外觀落差。有別於以往依賴環境光圖 (environment maps) 或對每個場景皆需額外微調擴散模型 (Diffusion Model) 的作法，我們提出一個高效且具泛化能力的和諧化流程，透過二維圖像和諧 (Image Harmonization) 網路多次地對插入的前景物體進行重著色，使其與周遭背景場景更加一致。和諧化後的結果會被用於逐步更新 3DGS 場景。我們同時也設計了一套針對此問題的評估標準。實驗結果顯示，我們的方法能夠產生視覺上和諧的合成影像，並優於現有基準方法。總體而言，我們為提升 3D 合成場景之寫實度提供了一個輕量化的解決方案。

優等

專題題目：

Aquila-MP: A RISC-V Multi-Core SoC with Level-2 Cache Coherence

學生姓名：楊子琛、陳燁

指導教授：蔡淳仁

專題介紹：

本專題設計並實作一個基於 RISC-V 架構的多核心 SoC。我們從實驗室原有的開源 Aquila 單核心處理器出發，擴展出一個可支援最多 16 個核心的靈活架構 (透過參數設定可調整為 2、4、8 或 16 核心)，並導入了支援 MESI 協定的二級快取一致性機制以及多核心原子擴展指令集，以有效提升平行運算的效能與記憶體資料的一致性。我們透過 FPGA 平台進行實際驗證，並採用平行矩陣運算、OCR 手寫辨識和平行陣列排序來驗證效能的改善成果。本專題的主要貢獻在於設計出一套輕量化且高效的 Snoop-Based 多核心系統，並以模組化方式將其開源釋出。此外，我們亦深入分析了 snoop-based 架構在擴展至八個核心以上時的效能瓶頸，為未來更高規模核心系統的發展及研究方向提供了明確的參考依據。

佳作

專題題目：

Window-based Rip-Up and Reroute: A Detailed Router Based on Tritonroute

學生姓名：郭宗信、廖重、房晉右

指導教授：李毅郎

專題介紹：

我們的專題是在 TritonRoute 的基礎上進行改進，結合了實驗室學長先前研究的成果，特別是在 window based 的前提之下，透過 window 內部的情況與 DRC 違規，管理 window 的繞線方式。我們提出了一種自適應的重繞策略，依據違規嚴重程度對視窗進行分類，並利用統計指標——window 內部線材密度的變異數——來引導重繞模式的選擇。透過分析多次迭代中 DRC 與線材密度表現的變異性，我們能夠辨識出設計中繞線不均勻或問題較多的區域，並在這些區域上選擇更積極的 rip-up 策略，以此將 DRC 違規擴散並消除。在針對複雜的 ISPD18 比賽提供的例子中，使得我們能夠完全消除 TritonRoute 難以處理的持續性違規問題。我們的方法在維持高繞線品質的同時，CPU 執行時間減少了 38.51%。雖然這帶來了 via 和 wire length 使用量增加，但繞線的穩健性與設計規則的遵從性都有明顯提升，使其更適用於真實世界的 VLSI 設計流程。

佳作

專題題目：

YearGuessr: A CLIP-Based Framework for Built-Year Prediction with Reasoning

學生姓名：吳定霖、司徒立中、徐和

指導教授：劉育綸

專題介紹：

建築物的年代對於永續發展、文化保存與安全等議題都非常重要，但目前尚無一個具備全球性且帶有年代順序的公開基準資料集。我們提出了 YearGuessr，這個資料集包含來自 157 個國家的 55,546 張維基百科建築立面照片，標註了從西元 1001 到 2024 年的連續建造年份，並搭配 GPS 位置、說明文字與瀏覽次數等資訊。我們將建築年代預測設定為「有順序的回歸問題 (ordinal regression)」，並引入了考慮熱門程度的 MAE (平均絕對誤差) 以及多個年代容許範圍下的準確率 ($\pm 5/20/50/100$ 年)。我們對超過 30 個模型進行評測，包括 CNN、Transformer、CLIP，以及多種視覺語言模型 (VLMs)。我們提出的 CLIP 基線模型 YearCLIP 證明「有順序地訓練」可以將 MAE 減半，而加入 GPS 資訊又能進一步降低 11% 的誤差。零樣本 (zero-shot) VLM 模型在著名地標的預測上表現出色，但對不知名建築則效果不佳，反映出其對熱門程度的偏誤，而我們設計的評估指標能捕捉這種偏差。我們的資料集採 CC BY-SA 4.0 授權，開源於 Hugging Face，程式碼則公開於 GitHub，這是首個針對建築年代預測與推理的、涵蓋千年尺度的開放基準資料集。

佳作

專題題目：

設計用於超低位元 LLM 推論之 Bit-Serial RISC-V DNN 加速器

學生姓名：周廷威、張芷瑜

指導教授：葉宗泰

專題介紹：

在本研究中，我們設計了 Bit-Serial RISC-V DNN 的加速器，用以支援超低位元的大型語言模型在邊緣裝置上高效運行。設計核心為一組整合於 RISC-V Ara 向量架構的客製化處理單元 (PE) 與專用指令集，原生支援非對稱混合精度運算，並具備動態零位元跳過 (zero-bit skipping) 機制，能略過冗餘的計算，有效避免資料填補與運算資源浪費。模擬結果顯示執行週期降低 16.1%，明顯提升硬體效率與推論表現。

Selected Outstanding Capstone Projects in Computer Science and Information Engineering



With the joint efforts of our faculty and students, the capstone projects in Computer Science and Information Engineering have received wide recognition. In 2024, under the guidance of Professor Ching-Chun Huang, Wu Yi-Jing, and under the guidance of Professor I-Chen Wu, Yen-Yi Chen, both won the National Science and Technology Council's 2024 College Student Research and Creative Works Award, showcasing the exceptional research and creative abilities of our students. This year, we are pleased to present excerpts from several outstanding capstone projects, continuing the proud tradition of excellence and inspiring more students to engage in innovative research.

Special Excellence Award

Project Title: Bringing Paintings to Life: 3D Scene Generation from Artistic Paintings

Students: Fang-Ci Tsai, Yi Chen

Advisor: Prof. Wen-Chieh Lin

Project Introduction:

This research develops an automated system capable of transforming various paintings into 3D virtual reality (VR) scenes within a short time. The system integrates multiple AI models, including semantic segmentation, depth estimation, and image inpainting, and employs Triplane Gaussian Splatting for 3D reconstruction to restore spatial depth. The scenes are then automatically imported into the Unity engine to generate explorable VR environments. Without manual modeling, a 3D VR scene can be generated within 60 minutes. Users can freely explore virtual worlds of different artistic styles, experiencing an innovative interaction that blends visual art and spatial perception. This work has broad applications in cultural preservation, game development, and art promotion.

Special Excellence Award

Project Title: Multi-Drones Automatically Pick & Place

Students: Chia-Jui Chang, Chin-Lu Chen, Hau-Chun Huang

Advisor: Prof. Yi-Ting Chen

Project Introduction:

In hazardous environments where humans cannot or should not directly enter—such as high-temperature fire scenes—autonomous drones can perform rapid reconnaissance, deliver critical supplies, and transmit information, reducing rescue risks and gaining precious response time. Our project features an automated drone system, multi-drone cooperative control techniques, and precise pick & place operations. Notably, we used indoor positioning instead of GPS to suit the application scenario. Beyond research, we participated in the Singapore Amazing Flying Machine Competition, collaborating with the HCIS Lab, NYCU Drone Club, and Maker Club, earning 4th place in Division D2. During the process, we built a simulation environment and successfully implemented simultaneous pick & place with four drones, with partial functionalities applied to real-world tests.

Excellence Award

Project Title: Gaussians Harmonizer: Recolorization for Consistent Appearance in Composite 3D Gaussian Splatting Scene

Students: Tsung-Yen Lee, Tsung-Ju Yang

Advisor: Prof. Yu-Lun Liu

Project Introduction:

We propose a solution to address visual disharmony in composite 3D Gaussian Splatting (3DGS) scenes. When objects rendered with 3DGS are directly inserted into an existing scene, noticeable inconsistencies often arise due to mismatched lighting and colors. Unlike prior approaches relying on environment maps or requiring scene-specific fine-tuning of diffusion models, we introduce an efficient and generalizable harmonization pipeline. By repeatedly applying an image harmonization network to recolor inserted foreground objects, they become visually consistent with the surrounding background. These harmonized results are then used to iteratively update the 3DGS scene. We also designed evaluation metrics for this problem. Experimental results show our method generates visually coherent composite images and outperforms existing baselines, offering a lightweight solution to improve the realism of 3D composite scenes.

Excellence Award

Project Title: Aquila-MP: A RISC-V Multi-Core

SoC with Level-2 Cache Coherence

Students: Tzu-Chen Yang, Ye Chen

Advisor: Prof. Chun-Jen Tsai

Project Introduction:

This project designs and implements a multi-core SoC based on the RISC-V architecture. Building upon our lab's open-source Aquila single-core processor, we extended it into a scalable architecture supporting up to 16 cores (configurable to 2, 4, 8, or 16 cores). We incorporated a level-2 cache coherence mechanism with the MESI protocol and multi-core atomic instruction set extensions to improve parallel performance and memory consistency. The system was validated on FPGA using parallel matrix computation, OCR handwriting recognition, and parallel array sorting. Our main contribution is a lightweight and efficient snoop-based multi-core system, released as a modular open-source project. We also analyzed performance bottlenecks when scaling beyond eight cores, providing insights for future development of larger-scale multi-core systems.

Merit Award

Project Title: Window-based Rip-Up and Reroute: A Detailed Router Based on TritonRoute

Students: Tsung-Hsin Kuo, Chung Liao, Chin-Yu Fang

Advisor: Prof. Yih-Lang Li

Project Introduction:

This project enhances TritonRoute by integrating results from prior lab research. Based on a window-based framework, we proposed an adaptive rerouting strategy that manages routing within windows according to design rule check (DRC) violations. Windows are classified by violation severity, and routing is guided by the variance of wire density as a statistical indicator. By analyzing DRC and wire density performance across iterations, we identified uneven routing areas and applied more aggressive rip-up strategies to eliminate persistent violations. In challenging ISPD18 benchmark cases, our method successfully resolved violations that TritonRoute struggled with. While it slightly increased via count and wire length, CPU runtime was reduced by 38.51%, and routing robustness and design rule compliance improved, making it more applicable to real-world VLSI design flows.

Merit Award

Project Title: YearGuessr: A CLIP-Based Framework for Built-Year Prediction with Reasoning

Students: Ting-Lin Wu, Li-Zhong Szu-Tu, He Syu

Advisor: Prof. Yu-Lun Liu

Project Introduction:

The construction year of a building is vital for sustainability, cultural preservation, and safety. However, no global benchmark dataset with chronological annotations currently exists. We present YearGuessr, a dataset comprising 55,546 building façade photos from Wikipedia across 157 countries, annotated with continuous construction years (1001–2024), GPS locations, text descriptions, and view counts. We formulate year prediction as an ordinal regression problem and introduce evaluation metrics such as popularity-weighted MAE and accuracy within $\pm 5/20/50/100$ years. We benchmarked 30+ models, including CNNs, Transformers, CLIP, and vision-language models (VLMs). Our CLIP baseline, YearCLIP, shows that ordinal training halves MAE, while adding GPS information reduces errors by another 11%. Zero-shot VLMs excel on landmarks but underperform on less-known buildings, reflecting bias toward popularity. Our evaluation metrics capture this bias. The dataset is released under CC BY-SA 4.0 on Hugging Face, and code is open-sourced on GitHub. YearGuessr is the first open benchmark for millennia-scale building year prediction and reasoning.

Merit Award

Project Title: Bit-Serial RISC-V DNN Accelerator for Ultra-Low Bit-Width LLM Inference

Students: Ting-Wei Chou, Chih-Yu Chang

Advisor: Prof. Tsung-Tai Yeh

Project Introduction:

In this study, we designed a Bit-Serial RISC-V DNN accelerator to efficiently support ultra-low-bit large language model inference on edge devices. At its core is a customized processing element (PE) and instruction set integrated into the RISC-V Ara vector architecture. It natively supports asymmetric mixed-precision operations and incorporates a dynamic zero-bit skipping mechanism to eliminate redundant computations, avoiding data padding and wasted resources. Simulation results demonstrate a 16.1% reduction in execution cycles, significantly improving hardware efficiency and inference performance.

資工系友聯誼球賽熱力開打！ 以球會友、以情相繫—跨世代資工人同場競技

文／杜懿洵

為了凝聚資工人的向心力、促進在校生與系友間的交流，資訊工程學系於 114 年 6 月至 7 月舉辦年度「系友聯誼球賽」。本次活動由系辦主辦、各系隊協辦，橫跨排球、羽球、桌球、壘球與籃球五項賽事，吸引近三百位系友、學生與教職員熱情參與。

五大項賽事於 6 月 7 日、6 月 14 日及 7 月 13 日陸續登場，從校內體育館到球場，滿場的加油聲與笑聲交織，讓人見證「以球會友」的真諦。

五大賽事接力開打，青春再現校園

首場排球賽於 6 月 7 日上午 9 點正式開打，共吸引 104 位選手，是本次規模最大的一場。同日下午進行的羽球與桌球賽，羽球賽共有 40 名選手參賽，其中包含兩位教授與多位畢業系友；桌球項目則由 26 位在在校生與系友輪番上陣比拼，系友與學弟妹互動熱絡，互相交流切磋球技。

6 月 14 日舉辦的壘球賽在陽光下進行友誼賽，共 33 位教職員與系友參加。比賽雖有勝負，但更多的是笑聲與團隊的默契。壓軸的籃球賽則於 7 月 13 日舉行，64 名球員熱血對決，場上活力四射，為整個系列賽畫下最熱烈的句點。

橫跨四十載，資工人跨世代同場競技

今年的球賽共有在校生逾百人、教職員 5 人、系友近 150 位參與，橫跨資工系 70 年代至 110 年代畢業的各世代；從現任美國 Winona State University 教授、資訊科學系 74 級林基正學長，到剛入學的資工 116 級新生，大家因為熱愛運動與母系情誼而齊聚一堂，展現出資工系獨有的凝聚力與傳承。

球場上的交流與回憶

資工 116 級、現任桌球系隊長林佑丞同學表示：「希望藉由這次比賽，讓學弟妹與學長姐有機會交流球技，也能更認識彼此。比賽過程中氣氛很好，大家都打得很開心，看到畢業十幾年的

學長姐回來，真的很感動。」

資工 99 級、現任 Garmin RD 的陳逸朴學長則說：「這次是受到曾建超老師邀請回來參賽，很懷念學生時期一起打球的時光。雖然綜合球館沒什麼變化，但看到學弟妹球技優異、還拿過系際盃冠軍，真的很欣慰。」他也建議：「若未來能延長比賽時間，讓大家多打一點球，或避開畢業典禮的時段會更理想。不過整體活動安排非常棒，希望每年都能繼續舉辦下去。」

今年也有多位教授與教職員親自上場！羽球場上，吳俊峯教授表示：「能和同學、系友一起打球真的很開心」！壘球賽中，資訊科學系 82 級、現任教職員的陳永昇老師則表示，活動非常棒，不僅增進感情，也讓大家動起來，期待未來能有更多人參與！

以球為名，串起世代與職涯的傳承

除了球技的交流外，本次球賽更成為校友情誼與職場經驗的交流平台。壘球場上的李厚徵學長（聯發科技工程師）、排球場上的張介豪學長（新代科技）、陳冠廷學長（群聯科技），以及籃球場上的羅文笙學長（聯發科）與李碩恩學長（玉山銀行），都與學弟妹熱烈交流，分享科技業與職涯經驗，為年輕一代提供寶貴的建議。

活動結束後，大家紛紛表示希望「系友盃」能成為資工系的年度傳統。「有這樣的平台，能讓畢業多年的學長姊重返校園、與學弟妹互動，真的非常珍貴。」系辦同仁表示，未來將持續規劃更多聯誼形式，讓資工人的連結不止於校園，更延伸到各個領域。

從六月到七月的五場比賽，聯誼球賽不僅是一場場運動賽事，更是一段段情誼的重逢。球場上的汗水、笑聲與擁抱，象徵著交大資工系「團結、創新、傳承」的精神。期待明年夏天，更多資工人再次回到母校，在球場上繼續奔馳，延續屬於交大資工的熱血與榮耀。

CS Alumni Sports Tournament Kicks Off with Passion! Connecting Generations through Sports and Friendship

To strengthen bonds among Computer Science (CS) members and foster connections between current students and alumni, the Department of Computer Science held its annual Alumni Sports Tournament from June to July 2025. Organized by the department and co-hosted by student sports teams, the event featured five competitions—volleyball, badminton, table tennis, softball, and basketball—and attracted nearly 300 participants, including alumni, students, and faculty members.

Five Events in Full Swing — Reviving Campus Spirit

The tournament series kicked off with the volleyball match on June 7 at 9 a.m., attracting 104 players—the largest event of the year. That same afternoon, the badminton and table tennis competitions followed. The badminton event featured 40 participants, including two professors and several alumni, while 26 students and alumni took turns competing in the table tennis matches. The lively interactions between alumni and current students fostered great camaraderie and friendly exchanges of skills.

The softball game, held on June 14, was a friendly match played under the bright sun, joined by 33 faculty members and alumni. While the game had winners and losers, it was filled even more with laughter and teamwork. Finally, the basketball tournament on July 13 brought together 64 passionate players in an energetic showdown, filling the court with enthusiasm and marking a spectacular finale to the entire series.

A Cross-Generational Gathering of CS Spirit

This year's tournament brought together over 100 current students, five faculty members, and nearly 150 alumni, spanning graduates from the 1970s to the 2020s. Among them was Prof. Chi-Cheng Lin (Class of 1985, Department of Information Science), now teaching at Winona State University, and the youngest freshmen of the Class of 2027. Despite the decades that separate them, all shared a common love for sports and their alma mater, demonstrating the enduring unity and legacy of the CS community.

Friendship and Memories on the Court

Yu-Cheng Lin (Class of 2027), current captain of the table tennis team, shared:

"I hope this event helps bridge generations—giving alumni and students a chance to play, connect, and get to know each other. The atmosphere was amazing, and it was touching to see alumni who graduated over a decade ago come back to play."

Alumnus I-Po Chen (Class of 2010), now an RD engineer at Garmin, said:

"Professor Chien-Chao Tseng invited me to join this year. It brought back great memories of playing during my student days. The gym hasn't changed much, but seeing the younger players' impressive skills—some even championship-level—makes me really proud. It would be great if future tournaments could run longer or avoid overlapping with the graduation ceremony. Overall, the event was excellent, and I hope it continues every year."

Several faculty members also joined the games! On the badminton court, Prof. Chun-Feng Wu remarked:

"It's so much fun to play alongside students and alumni!"

During the softball game, Prof. Yung-Sheng Chen (Class of 1993, Department of Information Science) commented:

"This is such a great event—it strengthens our bonds and gets everyone moving. I hope even more people join in next time!"

Passing Down the Spirit—From Sportsmanship to Career Wisdom

Beyond athletic competition, the tournament became a platform for networking and mentorship. Alumni such as Hou-Cheng Li (MediaTek) on the softball field, Chieh-Hao Chang (Syntec Technology) and Kuan-Ting Chen (Phison Electronics) on the volleyball court, and Wen-Sheng Lo (MediaTek) and Shuo-En Li (E.SUN Bank) on the basketball court enthusiastically shared insights about careers in the tech industry, offering valuable advice to younger participants.

After the games, many expressed their hope that the CS Alumni Cup would become an annual tradition.

"It's truly meaningful to have a platform that brings alumni back to campus to reconnect with students," said one of the event organizers. "We'll continue planning more opportunities like this, so that the CS network extends far beyond the university."

From June to July, the five tournaments were more than just sports events—they were joyful reunions of friendship and spirit. The sweat, laughter, and warm embraces on the court perfectly reflected the core values of NCTU CS: unity, innovation, and legacy.

As the summer ended, one message rang clear: the CS spirit lives on—strong, passionate, and ready to take the court again next year.



陽明交大資訊學院連續主辦兩大國際頂尖資安會議 ACM CCS 與 IEEE DSC 盛大登場

文／林珮雯



ACM CCS 2025 開幕。

10月連續主辦全球資安領域兩大國際頂尖會議——ACM Conference on Computer and Communications Security (ACM CCS 2025) 與 IEEE Conference on Dependable and Secure Computing (IEEE DSC 2025)，吸引超過千名來自世界各地的頂尖學者、研究人員與產業專家齊聚台北，共同探討資訊安全、隱私保護與可靠系統的最新研究成果與挑戰。

ACM CCS 2025 將於 10 月 13 日至 17 日在台北國際會議中心舉行，由美國電腦協會 (ACM) 旗下的 SIGSAC 主辦。自 1993 年創辦以來，ACM CCS 已成為與 USENIX Security Symposium、IEEE Symposium on Security and Privacy、ISOC NDSS 並列的全球四大資安頂會，也是當今四大資安頂尖會議中，唯一採全球巡迴舉辦形式的國際會議。今年由陽明交通大學成功爭取在台舉辦，為近 25 年來首次於亞洲實體登場。大會議題涵蓋網路與系統安全、應用密碼學、隱私保護、機器學習安全及區塊鏈安全等前沿主題，吸引超過千位國內外專家學者參與，展現台灣在全球資安研究的學術能量與國際影響力。

ACM CCS 2025 會議主席黃俊穎教授表示，這次能在台灣舉辦全球頂尖資安會議，是台灣資訊安全學界的重要里程碑。「ACM CCS 是國際學術界高度關注的資安盛會，我們希望藉此機會讓世界看見台灣積極參與國際資安研究社群的動能，也讓國內學者有機會和世界頂尖研究人員互動。今年除了主會議論文發表議程，週邊活動還包括年輕學者發展論壇、博士生論叢、以及 21 個工作坊。希望可以透過多元的活動，並促進國際間的合作與交流。」

緊接著，IEEE DSC 2025 於 10 月 18 日至 20 日在台北喜來登大飯店登場。該會議聚焦於軟體安全整合、系統可靠性與攻防技術實務等議題，由 IEEE Reliability Society 主辦，陽明交大資工系再度承辦，延續 2017 年成功舉辦同系列會議的佳績。今年會議特別設置「主議程」與「經

驗與實務議程」兩種投稿形式，鼓勵來自產業界、學術界與駭客社群的專家分享真實案例與研究成果，促進學術與實務的深度對話。

IEEE DSC 2025 會議主席李奇育教授表示，「這項新興的國際資安會議強調跨領域合作與實務導向研究，特別規劃「經驗與實務」專場，鼓勵駭客社群、產業界與學術界共同交流，促進理論與實務的緊密結合。透過這樣的互動，我們期盼激發更多創新思維，進一步帶動國內資安研究與產業的發展。」

陽明交通大學資訊學院院長謝續平教授表示：「能夠同時主辦 ACM CCS 與 IEEE DSC，象徵陽明交大在國際資安研究領域的高度肯定。透過這兩場重量級會議的舉辦，我們期待促進國內外產學研社群的連結與合作，激盪更多創新思維，並展現台灣在全球資訊安全研究上的影響力。」

這兩場國際盛會不僅將推動國內電腦與通訊安全研究的國際能見度，也為台灣建立起與世界接軌的學術與產業交流平台。透過與全球頂尖研究者與企業的對話，陽明交大資訊學院持續以「國際化、前瞻化、跨領域」為目標，培育更多兼具學術深度與實務洞察的資訊安全專才，為台灣資安技術與產業發展注入新能量。



ACM CCS 2025，由左至右為陳志成教授 (NYCU)、謝續平教授 (NYCU)、Véronique Cortier 教授 (Loria)、David Lie 教授 (U of T)、黃俊穎教授 (NYCU)。



IEEE DSC 2025，李奇育教授 (NYCU) (左 3)、Songwu Lu 教授 (UCLA) (左 4)、Guan-Hua Tu 教授 (MSU) (左 5)、Tian Xie 教授 (USU) (左 6)。

NYCU College of Information Hosts Two Premier International Cybersecurity Conferences — ACM CCS and IEEE DSC 2025 Grandly Held in Taipei

The College of Information at National Yang Ming Chiao Tung University (NYCU) successfully hosted two of the world's most prestigious international cybersecurity conferences in October 2025 — the ACM Conference on Computer and Communications Security (ACM CCS 2025) and the IEEE Conference on Dependable and Secure Computing (IEEE DSC 2025). These back-to-back conferences attracted over one thousand leading scholars, researchers, and industry experts from around the world to gather in Taipei, where they shared and discussed the latest advances and challenges in information security, privacy protection, and dependable systems.

ACM CCS 2025 took place from October 13 to 17 at the Taipei International Convention Center (TICC), organized by the Association for Computing Machinery (ACM) and its Special Interest Group on Security, Audit and Control (SIGSAC).

Since its inception in 1993, ACM CCS has become one of the four major global cybersecurity conferences, alongside the USENIX Security Symposium, the IEEE Symposium on Security and Privacy, and the ISOC Network and Distributed System Security Symposium (NDSS). It is also the only one among the four held in a rotating global format. This year, NYCU successfully brought the event to Taiwan, marking the first time in nearly 25 years that ACM CCS was physically held in Asia.

The conference covered a broad range of frontier topics, including network and system security, applied cryptography, privacy protection, machine learning security, and blockchain security, drawing over a thousand international participants and demonstrating Taiwan's academic strength and growing influence in global cybersecurity research.

Professor Chun-Ying Huang, General Chair of ACM CCS 2025, remarked that hosting this top-tier conference in Taiwan represents a significant milestone for the nation's cybersecurity research community: "ACM CCS is one of the most influential gatherings in the international academic cybersecurity community. We hope this event showcases Taiwan's strong engagement with the global research network while giving local scholars the chance to interact directly with leading researchers worldwide."

In addition to the main technical program, the conference also features a Young Scholars Development Forum, a Doctoral Symposium, and 21 specialized workshops — all designed to foster collaboration and international exchange."

Immediately following ACM CCS, the IEEE DSC 2025 conference was held from October 18 to 20 at the Sheraton Grand Taipei Hotel.

Organized by the IEEE Reliability Society and hosted once again by NYCU's Department of Computer Science, this year's event built upon the success of NYCU's previous hosting of the same series in 2017.

IEEE DSC 2025 focused on hardware-software security integration, system dependability, and practical attack-defense techniques.

The program included two tracks — a Main Conference Track and an Experience & Practice Track — encouraging experts from academia, industry, and the hacker community to share real-world case studies and practical insights, thereby promoting in-depth dialogue between research and practice.

Professor Chi-Yu Li, General Chair of IEEE DSC 2025, noted: "This emerging international cybersecurity conference emphasizes cross-disciplinary collaboration and practical, real-world research. The newly added 'Experience and Practice' track encourages participation from the hacker, industrial, and academic communities, fostering closer connections between theory and practice. Through this exchange, we hope to spark innovative ideas and further advance Taiwan's cybersecurity research and industry development."

Professor Shihpyng Shieh, Dean of NYCU's College of Information, added: "Hosting both ACM CCS and IEEE DSC in the same month represents strong international recognition of NYCU's leadership in cybersecurity research. Through these two world-class conferences, we aim to strengthen connections among global academic, industrial, and research communities, inspire innovative thinking, and showcase Taiwan's growing influence in cybersecurity research."

These two major international events not only enhanced the visibility of Taiwan's cybersecurity research but also established a robust platform for academic and industrial collaboration.

By fostering dialogue with top researchers and global technology leaders, NYCU's College of Information continues to pursue its vision of internationalization, forward-thinking, and cross-disciplinary innovation, nurturing new generations of cybersecurity experts who combine academic excellence with real-world insight — driving Taiwan's cybersecurity technology and industry forward.



IEEE DSC 2025 encouraged experts from academia, industry, and the hacker community to share real-world cases and research findings.

資訊學院學生以創新研究登上國際頂尖會議

文稿整理／林珮雯

國立陽明交通大學資訊學院學生近年在人工智慧、電腦架構與知識系統等領域屢創佳績，於多個國際頂尖會議發表研究成果，展現卓越的學術實力與創新能量。特別值得一提的是，葉宗泰教授今年帶領團隊於 International Symposium on Computer Architecture (ISCA) 發表論文，這是近二十年來交大少見、極具代表性的成果，充分展現本院在高效能運算與系統設計領域的研究深度。

從深度學習與影像生成、語意本體與知識結構，到高效能運算架構設計，學生們不僅展現跨領域的創新思維，更透過與全球研究者的交流，拓展了國際視野。這些經驗讓他們體會研究的深度與挑戰，也強化了與世界學術社群接軌的信心。無論是在 ICLR、ISCA 或 FOIS 等世界級舞台上，他們的努力與成果都獲得國際肯定，展現出資訊學院持續培育頂尖科研人才的實力與決心。

發表論文：Reinvigorating Structured Knowledge and Ontologies for Trustworthy and Beneficial AI and Robotics

作者：Chun-yien Chang, Yi-Ting Chen, and Ying-ping Chen

指導教授：陳穎平老師

國際會議名稱：The International Conference on Formal Ontology in Information Systems (FOIS)

該會議重要性：

「資訊系統正規本體」(FOIS) 是國際公認在本體論基礎研究上具有領導地位的會議。尤其在推動上位本體 (upper ontology) 的理論與方法發展上扮演重要角色。此一為語意互操作性 (semantic interoperability)、可解釋人工智慧 (explainable AI)、以及可信賴之知識基礎設施 (trustworthy knowledge infrastructures) 設計的根基。FOIS 匯聚了來自哲學、電腦科學、資訊系統與人工智慧等多元領域的專家，建立了一個珍貴的論壇，使概念嚴謹性與系統設計實務得以深度交流。其長期的聲望與影響力使其成為形塑引導下一代具互操作性智慧系統之本體論基礎的重要會議。

張俊彥同學心得：

雖然本體論應用在台灣本地研究中並不乏實例，但由於缺乏基礎研究、加上與相關國際社群缺乏實質連結，使得這一領域在本地的能見度極低。然而在人工智慧時代，紮實的語意基礎與依據本體論所建立的互操作性，已經成為不可或缺的關鍵。在這樣的背景下，我們的論文能夠被 FOIS 這樣頂級本體論會議接受並進入主議程，對於台灣的學術機構而言可說是少見且難能可貴的。這次發表不只是單純的論文報告，更是從在地經驗出發向國際頂尖社群發出的邀請，特別是在人工智慧與自動代理人正以前所未有的發展速度介入人類生活的關鍵時刻，我們呼籲社群伙伴

們在專注各自艱深本體研究同時，也要留意共同合作推動本體論在 AI 政策上做出關鍵貢獻。該場次結束後有多位來自世界各地資深研究者與實務工作者，親自前來回應與鼓勵，不僅肯定此一立論符合時代需求，也為建立實質國際合作露出曙光。這次經驗讓我更堅信持續耕耘本體論這個艱難卻關鍵領域的價值，也期盼這樣的工作能在國內的環境被及時接受且蓬勃發展起來。

發表論文：Ranking-aware Adapter for Text-driven Image Ordering with CLIP

作者：Wei-Hsiang Yu, Yen-Yu Lin, Ming-Hsuan Yang, Yi-Hsuan Tsai

指導老師：林彥宇老師

國際會議名稱：International Conference on Learning Representations (ICLR)

該會議重要性：

國際學習表徵研討會 (International Conference on Learning Representations, ICLR) 為人工智慧與機器學習領域之頂尖國際會議之一，範圍涵蓋深度學習於人工智慧、統計學及資料科學之各個面向，並延伸至機器視覺、大語言模型、生成式模型、語音辨識以及機器人技術等重要應用領域。ICLR 每年吸引來自逾 70 國數千名來自國際企業與研究機構的工程人員與學者，除帶來最前沿的研究結果、全新的開發展示與落地應用以外，也是一個能與各國頂尖專家學者交流的重要場合。

游為翔同學心得：

感謝林彥宇老師以及多位合作者在研究、文章撰寫及意見回覆過程的指導。本次研究中，我們將文字融入影像後，再設計精巧的影像對比機制使模型可以支援多影像多任務排序。有幸能受到 ICLR 審稿者的青睞並被接受，對我的研究生涯是一項重要的里程碑。在會議期間與來自世界各國的學者分享研究並交換意見，從不同觀點切入研究與融合各種想法，除了讓我對過去比較少接觸的領域有了更深的理解，也從中獲得許多可以跨領域及應用的新想法。另外值得一提的是，在會場一隅，也隨處可見其他研究者埋首進行實驗與撰寫文章，其勤奮與專注令我深感敬佩，也激勵需要更加努力向上的熱情。

發表論文：Boost self-supervised dataset distillation via parameterization, predefined augmentation, and approximation

作者：Sheng-Feng Yu, Jia-Jiun Yao, Wei-Chen Chiu

指導教授：邱維辰老師

國際會議名稱：The Thirteenth International Conference on Learning Representations (ICLR

2025)

該會議重要性：

The International Conference on Learning Representations (ICLR) 是全球最具影響力的人工智慧學術會議之一，與 NeurIPS 和 ICML 並列為發表頂尖研究成果的首要平台。該會議聚焦於深度學習、表徵學習及相關領域，並以創新的「公開審查制度」聞名，強調學術透明與合作交流。ICLR 吸引了來自學界的頂尖研究人員及來自產業界的領導團隊，如 Google DeepMind、OpenAI、Meta AI 等，是展示最先進研究成果、引領機器學習發展方向的重要舞台。能在此會議獲得論文接受，代表該研究具有高度的學術影響力、創新性與在全球人工智慧研究社群中的卓越地位。

游聲峰同學心得：

參加 ICLR 2025 是一次難忘的經驗。能夠置身於眾多機器學習領域的頂尖人才之中，親身感受他們分享塑造未來的前沿理念，讓我覺得一切都像在夢中。我由衷感謝邱教授的指導與鼓勵，若沒有他的支持，我無法有機會將我們的研究帶到這樣一個令人驚嘆的國際舞台。

我最享受的其實是發表之外的交流時刻。與其他研究者的對話讓我對自己的工作有了新的觀點，也令我驚喜的是，竟有這麼多人對我們的方法表現出真誠的興趣。這些交流不僅肯定了我們的努力，也激發了我許多全新的想法。

除了學術層面，ICLR 也再次提醒我為什麼熱愛研究——這不只是為了解決問題，更是因為能成為一個彼此激勵、共同前進的社群的一員。這段經歷讓我既感到謙卑又深受鼓舞，回國後我對持續探索的熱情比以往更加強烈。

發表論文：Efficient Action-Constrained Reinforcement Learning via Acceptance-Rejection Method and Augmented MDPs

作者：Wei Hung, Shao-Hua Sun, Ping-Chun Hsieh

指導教授：謝秉均教授

國際會議名稱：The 13th International Conference on Learning Representations (ICLR 2025)

該會議重要性：

ICLR (International Conference on Learning Representations) 是全球機器學習領域的頂級盛會之一，與 NeurIPS、ICML 齊名，被公認為深度學習、表徵學習與人工智慧研究的指標性會議。本屆 ICLR 2025 睽違多年回到亞洲 (新加坡) 舉行，規模盛大，吸引了來自北美、歐洲及亞洲的頂尖研究學者、數據科學家與業界專家，共同探討神經網路與新一代 AI 架構。能入選 ICLR 發表，代表研究在算法與理論層面具備高度創新性與影響力，更是站在國際學術界與產業應用前沿，與全球頂尖人才深度交流的重要里程碑。

洪偉同學心得：

我很榮幸能親自前往新加坡，參與近年來首

次回到亞洲舉辦的 ICLR 2025 實體會議。這是一個深入體驗國際頂尖學術氛圍的寶貴旅程，不僅有機會在 Poster Session 中發表我們的研究，我們的論文探討「動作受限強化學習 (ACRL)」的通用高效框架，旨在為機器人控制等安全關鍵應用實現零動作違規的控制策略，更重要的是能在這個國際舞台上與全球專家進行深度交流，在 ICLR 2025 期間，我獲得了極具啟發性的與會經驗：

專業反思與深度交流：我與來自 Google、IBM 等頂尖國際研究機構的學者進行了深入探討，特別針對動作限制問題中的多目標決策學習與實驗設計細節。這些面對面的互動，不僅是技術的交流，更讓我能深入反思自身工作的潛在盲點，並為未來將多目標學習架構應用於增強單目標訓練的魯棒性開拓了新視野。

前沿趨勢與跨域啟發：本屆會議主題幾乎由 LLM 主導。我參與了多場 RLxLLM 的專題討論，觀察到許多將語言模型嵌入決策迴路，作為 policy planner 或 reward model 的前沿設計。這對我未來計畫將 LLM 融入強化學習的研究提供了重要的實務參考，也讓我深刻體會到跨領域合作已成為現代 AI 研究的必然趨勢。

技術轉譯與研究願景：透過這趟旅程，我更理解到學術研究的價值不僅在於論文發表，更在於技術的持續創新與轉譯。與會的經歷鼓勵我將研究視角擴展至更複雜的實際應用情境，持續提升算法在現實世界的效能與可行性。

感謝團隊夥伴的共同努力與計畫支持，這次經驗不僅讓我們的研究成果站上國際頂級舞台，更為我個人的學術生涯注入了強大的動力。

發表論文：AQB8: Energy-Efficient Ray Tracing Accelerator through Multi-Level Quantization

作者：Yen-Chieh Huang, Chen-Pin Yang, Tsung Tai Yeh

指導教授：葉宗泰老師

國際會議名稱：International Symposium on Computer Architecture (ISCA)

該會議重要性：

ISCA (International Symposium on Computer Architecture) 是計算機架構領域最頂尖的國際會議之一。它發表的論文代表最新、最具創新性的研究，涵蓋處理器設計、記憶體系統、加速器、平行運算架構等主題。2025 Acceptance rate: 22%。

楊辰彬同學心得：

非常感謝宗泰老師與彥傑同學的持續努力與緊密合作，讓我們有幸代表交大出席 ISCA 這場計算機架構領域的頂尖國際會議。在本篇論文中，我們提出了一種全新的光線追蹤加速結構，針對當前領域所面臨的計算與效能瓶頸，提供了一個具體而有效的解決方案。此次能在會場中向 AMD、Intel 以及華為等國際領先廠商展示研究成果，並與世界頂尖學者進行深入交流，讓我收穫了許多寶貴的知識與啟發，拓展了國際視野並激發更多創新的設計思維。

CCS Students Shine on the Global Stage with Innovative Research

In recent years, students from the College of Computer Science at National Yang Ming Chiao Tung University (NYCU) have made remarkable achievements across diverse fields including artificial intelligence, computer architecture, and knowledge systems. Their research has been presented at top-tier international conferences, showcasing exceptional academic strength and creativity.

A particularly noteworthy milestone this year is Prof. Tsung-Tai Yeh's team publishing a paper at the International Symposium on Computer Architecture (ISCA) — one of the most prestigious conferences in the field and a rare accomplishment for NYCU in nearly two decades. This success highlights the College's depth in high-performance computing and systems design research.

From deep learning and image generation to semantic ontology and knowledge structures, as well as high-efficiency computing architectures, NYCU students demonstrate interdisciplinary innovation and global engagement. Their participation in world-leading venues such as ICLR, ISCA, and FOIS not only reflects their dedication and capability but also underscores the College's commitment to cultivating the next generation of outstanding researchers.

Title: Reinforcing Structured Knowledge and Ontologies for Trustworthy and Beneficial AI and Robotics

Authors: Chun-yien Chang, Yi-Ting Chen, and Ying-ping Chen

Advisor: Prof. Ying-ping Chen

Conference: The International Conference on Formal Ontology in Information Systems (FOIS)

Significance:

The Formal Ontology in Information Systems (FOIS) conference is internationally recognized as the leading venue for foundational research in ontology. It plays a central role in advancing theoretical and methodological work on upper ontology, a field that underpins semantic interoperability, explainable AI, and the design of trustworthy knowledge infrastructures. FOIS brings together experts across disciplines—computer science, philosophy, information systems, and artificial intelligence—establishing a rare forum where conceptual rigor and practical system design converge. Its long-standing reputation and impact make it a cornerstone event for shaping how ontological foundations inform the next generation of intelligent and interoperable systems.

The experience of Chun-yien Chang:

In Taiwan, the application of ontology in research is not rare, yet the lack of foundational work and the near absence of engagement with the international community have left this field with little visibility, even as grounded semantics and ontology-based interoperability are becoming indispensable in the AI era. Against this backdrop, the acceptance of our position paper into the main track of FOIS represents a rare milestone for a Taiwanese institution. The paper was conceived not merely as a presentation, but as a call from our local vantage point: to urge that, beyond advancing individual projects, we must collectively recognize ontology's potential contributions at the policy level, especially as AI and robotics begin to reshape human life on an

unprecedented scale. The responses and encouragement I received from senior researchers and practitioners around the world after the conference affirmed both the timeliness of this perspective and the possibility of building meaningful connections. This experience has encouraged me to continue developing this difficult but vital field, with the hope that this work may contribute to its growth first and foremost within the domestic environment—despite the challenges that remain.

Title: Ranking-aware Adapter for Text-driven Image Ordering with CLIP

Authors: Wei-Hsiang Yu, Yen-Yu Lin, Ming-Hsuan Yang, and Yi-Hsuan Tsai

Advisor: Prof. Yen-Yu Lin

Conference: International Conference on Learning Representations (ICLR)

Significance:

The International Conference on Learning Representations (ICLR) is one of the world's leading conferences in artificial intelligence, recognized alongside NeurIPS and ICML as a premier venue for groundbreaking research. It focuses on deep learning, representation learning, and related fields, with an innovative open review process that fosters transparency and collaboration. Attracting top researchers from academia and industry leaders such as Google DeepMind, OpenAI, and Meta AI, ICLR is a hub for presenting state-of-the-art methods that often shape the future of machine learning. Acceptance here signifies high academic impact, innovation, and global recognition in the AI research community.

The experience of Wei-Hsiang Yu:

I am deeply grateful to Prof. Lin and all collaborators for their guidance throughout the research, writing, and review process. In this work, we proposed a novel approach that integrates textual input with images and designs a contrastive mechanism to enable multi-image, multi-task ranking. Having our paper accepted by ICLR was an important milestone in my academic journey.

During the conference, I had the chance to discuss and exchange ideas with researchers from around the world, gaining new insights and discovering potential interdisciplinary applications. I was particularly impressed by how dedicated many attendees were — conducting experiments and writing papers even during the sessions — which reminded me of the value of persistence and focus in research, and inspired me to work even harder toward excellence.

Title: Boost Self-Supervised Dataset Distillation via Parameterization, Predefined Augmentation, and Approximation

Authors: Sheng-Feng Yu, Jia-Jiun Yao, and Wei-Chen Chiu

Advisor: Prof. Wei-Chen Chiu

Conference: The Thirteenth International Conference on Learning Representations (ICLR 2025)

Significance:

The International Conference on Learning Representations (ICLR) is one of the world's leading conferences in artificial intelligence, recognized alongside NeurIPS and ICML as a premier venue for groundbreaking research. It focuses on deep learning, representation learning, and related fields, with an innovative open review process that fosters transparency and collaboration. Attracting top researchers from academia and industry leaders such as Google DeepMind, OpenAI, and Meta AI, ICLR is a hub for presenting state-of-the-art methods that often shape the future of machine learning. Acceptance here signifies high academic impact, innovation, and global recognition in the AI research community.

The experience of Sheng-Feng Yu:

Attending ICLR 2025 was an unforgettable experience. It felt surreal to be surrounded by so many brilliant minds in machine learning, each sharing cutting-edge ideas that are shaping the future of the field. I am truly thankful to Prof. Chiu for his mentorship and encouragement—without his support, I wouldn't have had the chance to bring our work to such an incredible platform.

What I enjoyed the most were the conversations outside the presentations. Talking with other researchers gave me new perspectives on our work, and I was surprised by how many people showed genuine interest in our method. Those exchanges not only validated the effort we've put in but also sparked fresh ideas I hadn't considered before.

Beyond the academic side, ICLR also reminded me why I love doing research—it's not just about solving problems, but about being part of a community that pushes each other forward. The experience left me both humbled and motivated, and I returned home with a stronger drive to keep exploring.

Title: Efficient Action-Constrained Reinforcement Learning via Acceptance-Rejection Method and Augmented MDPs

Authors: Wei Hung, Shao-Hua Sun, Ping-Chun Hsieh

Advisor: Prof. Ping-Chun Hsieh

Conference: The 13th International Conference on Learning Representations (ICLR 2025)

Significance:

The International Conference on Learning Representations (ICLR) is one of the world's premier conferences in machine learning, recognized alongside NeurIPS and ICML as a top venue for cutting-edge research in deep learning, representation learning, and artificial intelligence. The 2025 edition marked a special milestone as ICLR returned to Asia (Singapore) for the first time in years, drawing leading researchers, data scientists, and industry experts from North America, Europe, and Asia. Being accepted for presentation at ICLR signifies exceptional innovation and impact at both algorithmic and theoretical levels, offering an invaluable opportunity to engage directly with the global AI research frontier.

The experience of Wei Hung:

I was deeply honored to attend ICLR 2025 in Singapore, the first in-person conference held in Asia in recent years. It was an extraordinary journey that allowed me to fully immerse myself in a world-class academic atmosphere. During the poster session, I had the opportunity to present our research on a general and efficient framework for Action-Constrained Reinforcement Learning (ACRL), designed to achieve zero action violations in safety-critical applications such as robotic control. More importantly, I had the privilege of engaging in profound discussions with global experts, gaining valuable inspiration throughout the event.

Professional reflection and deep exchange:

I had in-depth conversations with researchers from top international institutions such as Google and IBM, focusing on topics like multi-objective decision learning and experimental design in the context of action constraints. These face-to-face discussions went beyond technical exchange—they encouraged me to reflect critically on potential blind spots in my own research and opened new perspectives for leveraging multi-objective learning architectures to improve the robustness of single-objective training.

Emerging trends and cross-domain insights:

This year's conference was heavily dominated by topics surrounding Large Language Models (LLMs). I participated in several RLxLLM sessions and observed many pioneering approaches that integrate LLMs into the decision-making loop as policy planners or reward models. These insights provided valuable guidance for my future research on integrating LLMs into reinforcement learning, and they deepened my understanding that cross-disciplinary collaboration has become an inevitable direction in modern AI research.

Technology translation and research vision:

Through this journey, I realized that the value of academic research lies not only in publishing papers but also in continuously innovating and translating technologies into real-world impact. This experience encouraged me to broaden my research perspective toward more complex and practical scenarios, striving to enhance both the performance and applicability of algorithms in real-world contexts.

I am sincerely grateful to my teammates for their hard work and to our project sponsors for their support. This experience not only allowed our research to be showcased on an international stage but also infused my academic journey with renewed energy and purpose.

Title: AQB8: Energy-Efficient Ray Tracing Accelerator through Multi-Level Quantization

Authors: Yen-Chieh Huang, Chen-Pin Yang, and Tsung-Tai Yeh

Advisor: Prof. Tsung-Tai Yeh

Conference: International Symposium on Computer Architecture (ISCA)

Significance:

The International Symposium on Computer Architecture (ISCA) is one of the most prestigious conferences in computer architecture, featuring the latest and most innovative research on processor design, memory systems, accelerators, and parallel computing architectures. The 2025 acceptance rate was 22%.

The experience of Chen-Pin Yang:

I am deeply grateful to Prof. Yeh and my teammate Yen-Chieh for their tireless collaboration, which made it possible for us to represent NYCU at ISCA — one of the world's premier computer architecture conferences. In our paper, we proposed a novel ray tracing acceleration structure that provides an effective solution to current challenges in computation and performance efficiency. Presenting our work to leading industry players such as AMD, Intel, and Huawei, and engaging with top researchers worldwide, was both inspiring and enlightening. This experience broadened my horizons and sparked new ideas for future designs, further strengthening my motivation to pursue innovation in this field.

本刊每學期發刊一期，做為本院師生與系友、家長、院友的溝通橋樑。每期報導本院近期研究現況，內容包括人事動態、國際交流、師生獲獎等。期能經由本刊使讀者掌握資訊學院最新動態，促進彼此互動。

Published twice per year, this periodical, as a bridge between faculty, students, alumni, parents and friends of the college, is dedicated to the latest research updates, including personnel changes, international collaboration, faculty & students honors, etc., in order to assist readers to keep update of the latest developments of the College of Computer Science (CCS) and encourage mutual interaction.



一、人事動態

- ◇ 高孟駿老師於 2025 年 8 月 1 日起升等為本校教授。
- ◇ 陳碩漢老師於 2025 年 8 月 1 日由本校產創學院智能所轉至本院資工系。
- ◇ 黃世昆老師於 2025 年 8 月 1 日由本校資訊技術服務中心轉至本院資工系。
- ◇ 陳昱芝老師、王邦任老師自 2025 年 8 月 1 日起至本系服務，歡迎兩位老師的加入。
- ◇ 本院林一平教授將於 2026 年 2 月退休。林教授研究領域為個人通信網路、行動計算與系統模擬，對本院學術與研究發展貢獻卓著，並作育英才無數。

二、國際交流

- ◇ 美國伊利諾大學香檳分校 (UIUC) 工學院師生

於 2025 年 5 月來訪本院進行交流。

- ◇ 本院陳志成教授、黃俊龍教授、張立平教授於 2025 年 6 月訪問美國伊利諾大學香檳分校 (UIUC) iSchool 及西北大學，加強了與國際頂尖大學的聯繫及合作。
- ◇ 美國華盛頓大學聖路易分校 (Washington University in St. Louis) Roch Gu rin 教授於 2025 年 6 月 9 日至本系演講，講題為：「A brief (machine learning) foray at the edge of computing」。
- ◇ 美國 Nvidia 公司劉洛培副總裁於 2025 年 6 月 12 日至本院演講，講題為：「Cosmos World Foundation Models for Physical AI」。
- ◇ 美國加州大學戴維斯分校 (University of California, Davis) 王浩全教授於 2025 年 6 月 24 日至本系演講，講題為：「Toward Re-Structuring Group Communication with Active

and Agentic Mediations」。

- ◇ 美國英屬哥倫比亞大學 (University of British Columbia) 暨 Meta Reality Labs 劉育倫副教授於 2025 年 7 月 22 日至本系演講，講題為：「Neural PDE AI-Enhanced Physics Simulation」。
- ◇ 法國雷恩第一大學 (University of Rennes 1) Marc Christie 教授於 2025 年 10 月 23 日至本系演講，講題為：「Key Challenges in Computational Cinematography」。
- ◇ 美國德州農工大學 (Texas A&M University) 電機與電腦工程學系侯奕宏教授於 2025 年 10 月 8 日至本系演講，講題為：「Distributed No-Regret Learning for Multi-Stage Systems with End-to-End Bandit Feedback」。

三、教師榮譽

- ◇ 吳俊峯教授榮獲中國電機工程學會 114 年度優秀青年電機工程師獎！
- ◇ 邱維辰教授榮獲十大傑出青年！
- ◇ 莊仁輝、彭文孝教授團隊、王昱舜、彭文志教授團隊、曾新穆教授團隊榮獲 2025 未來科技獎！
- ◇ 曾意儒教授榮獲 113 學年度傑出教學獎
- ◇ 林奕成教授、張立平教授、游逸平教授榮獲 113 學年度優良教學獎
- ◇ 謝續平教授榮獲 Outstanding Service Award as Editor-in-Chief of IEEE Transactions on Reliability!
- ◇ 彭文孝教授榮獲第 23 屆有庠科技論文獎！
- ◇ 吳俊峯教授榮獲旺宏電子學者！

四、學生榮譽

- ◇ 李奇育教授指導許仁杰同學榮獲 2025 年中華民國資訊安全學會賴溪松教授論文獎碩士組佳作！
- ◇ 謝旻錚教授指導官霆軒、歐育淇、范劍維同學榮獲 2025 ICPC 國際大學生程式設計競賽亞太錦標賽銅牌獎，並晉級 2025 ICPC 世界總決賽！
- ◇ 謝旻錚教授指導官霆軒、歐育淇、陳淦昱同學榮獲 2025 ICPC 國際大學生程式設計競賽台中區域賽金獎。
- ◇ 謝旻錚教授指導霍朝元、張皓崴、周宜勳同

學榮獲 2025 ICPC 國際大學生程式設計競賽台中區域賽金獎。

- ◇ 曾建超教授指導王則涵同學榮獲 2025 台灣創新技術博覽會發明競賽銀牌獎！
- ◇ 易志偉教授指導李亦晴、李至曜同學榮獲 2025 A* Awards 金全獎！
- ◇ 李奇育教授指導曾睿銓同學榮獲 2025 A* Awards 金全獎！
- ◇ 彭文孝教授指導陳詒歆同學榮獲第十八屆崇越論文大賞：AI 應用論文競賽博士組優等獎！
- ◇ 邱維辰、陳奕廷教授指導陳品綸同學榮獲第十八屆崇越論文大賞：AI 應用論文競賽碩士組 (AI 技術開發與應用組) 特優獎！
- ◇ 林一平、謝旻錚教授指導翁愉嫻同學榮獲第十八屆崇越論文大賞：AI 應用論文競賽碩士組 (AI 技術開發與應用組) 特優獎！
- ◇ 林一平教授指導王旻玄同學榮獲第十八屆崇越論文大賞：AI 應用論文競賽碩士組 (AI 技術開發與應用組) 優等獎！
- ◇ 謝秉均教授指導葉佳翰同學榮獲第十八屆崇越論文大賞：AI 應用論文競賽碩士組 (AI 技術開發與應用組) 優等獎！
- ◇ 曾意儒教授指導梁家瑀同學榮獲第十八屆崇越論文大賞：AI 應用論文競賽碩士組 (AI 技術開發與應用組) 佳作獎！
- ◇ 林彥宇、莊仁輝教授指導禹安銳同學榮獲 IPPR 第十八屆博士論文佳作獎！
- ◇ 彭文孝教授指導陳詒歆同學榮獲 IPPR 第十八屆博士論文佳作獎！
- ◇ 黃敬群教授指導蔡咏霖同學榮獲 IPPR 第十八屆碩士論文佳作獎！
- ◇ 黃敬群教授指導薛皓謙同學榮獲 IPPR 第十八屆碩士論文佳作獎！
- ◇ 曾煜棋、林政寬教授指導殷暉智、周品萱、廖兆琪同學參加 2025 VizWiz Grand Challenge Workshop，於 BIV-Priv 項目榮獲第一名！
- ◇ 黃敬群教授指導吳宜靜同學榮獲國家科學及技術委員會「113 年度大專學生研究計畫研究創作獎」！
- ◇ 吳毅成教授指導陳妍沂同學榮獲國家科學及技術委員會「113 年度大專學生研究計畫研究創作獎」！

1. Personnel Changes

- Dr. Mong-Jen Kao has been promoted to Professor at National Yang Ming Chiao Tung University, effective August 1st, 2025.
- Dr. Shuo-Han Chen has transferred from the Institute of Artificial Intelligence Innovation, Industry Academia Innovation School to the Department of Computer Science, College of Computer Science, effective August 1st, 2025.
- Dr. Shih-Kun Huang has transferred from the Information Technology Service Center to the Department of Computer Science, College of Computer Science, effective August 1st, 2025.
- Dr. Yu-Chih Chen and Dr. Dennis Wang have joined the Department of Computer Science as faculty members, effective August 1st, 2025. We warmly welcome both professors to our department.
- Prof. Jason Yi-Bing Lin will retire in February 2026. Prof. Lin's research areas include personal communications networks, mobile computing, and system simulation. He has made outstanding contributions to the college's academic and research development a

2. International Collaboration

- Faculty and students from the College of Engineering, University of Illinois at Urbana-Champaign (UIUC), visited the College of Computer Science, National Yang Ming Chiao Tung University, in May 2025 for academic exchange.
- Professors Chih-Cheng Chen, Chun-Long Huang, and Li-Ping Chang from our college visited the iSchool of UIUC and Northwestern University in June 2025, further strengthening ties and collaboration with top international universities.
- Professor Roch Guérin from Washington University in St. Louis, USA, gave a lecture at our department on June 9, 2025. The topic was "A brief (machine learning) foray at the edge of computing."
- Dr. Ming-Yu Liu, Vice President at Nvidia, USA, gave a lecture at our college on June 12, 2025. The topic was "Cosmos World Foundation Models for Physical AI."

- Professor Hao-Chuan Wang from the University of California, Davis, USA, gave a lecture at our department on June 24, 2025. The topic was "Toward Re-Structuring Group Communication with Active and Agentic Mediations."
- Associate Professor Yu-Lun Liu from the University of British Columbia and Meta Reality Labs, Canada, gave a lecture at our department on July 22, 2025. The topic was "Neural PDE AI-Enhanced Physics Simulation."
- Professor Marc Christie from the University of Rennes 1, France, gave a lecture at our department on October 23, 2025. The topic was "Key Challenges in Computational Cinematography."
- Professor Yi-Hung Hou from the Department of Electrical and Computer Engineering, Texas A&M University, USA, gave a lecture at our department on October 8, 2025. The topic was "Distributed No-Regret Learning for Multi-Stage Systems with End-to-End Bandit Feedback."

3. Faculty Honors

- Dr. Chun-Feng Wu received the 2025 Outstanding Young Electrical Engineer Award from the Chinese Institute of Electrical Engineering.
- Dr. Wei-Chen Chiu was selected as one of the Ten Outstanding Young Persons of 2025.
- The teams led by Dr. Jen-Hui Chuang and Dr. Wen-Hsiao Peng, Dr. Yu-Shuen Wang and Dr. Wen-Chih Peng, as well as Dr. Vincent S. Tseng, received the 2025 Future Tech Award.
- Dr. Yi-Ju Tseng received the 2024 Outstanding Teaching Award.
- Dr. I-Chen Lin, Dr. Li-Pin Chang, and Dr. Yi-Ping You received the 2024 Excellent Teaching Award.
- Dr. Shihpyng Shieh received the Outstanding Service Award as Editor-in-Chief of IEEE Transactions on Reliability.
- Dr. Wen-Hsiao Peng received the 23rd Y. Z. Hsu Scientific Paper Award.
- Dr. Chun-Feng Wu was named a Macronix Scholar.

4. Student Honors

- Student Ren-Chieh Hsu, guided by Professor Chi-Yu Li, received the Honorable Mention in the Master's Thesis category of the 2025 Prof. Hsi-Sung Lai Paper Award from the Chinese Cryptology and Information Security Association.
- Students Ting-Shiuan Guan, Yu-Chi Ou, and Jhao-Wei Fan, guided by Professor Min-Zheng Shieh, won the Bronze Medal at the 2025 ICPC Asia Pacific Championship and advanced to the 2025 ICPC World Finals.
- Students Ting-Shiuan Guan, Yu-Chi Ou, and Wei-Yu Chen, guided by Professor Min-Zheng Shieh, won the Gold Medal at the 2025 ICPC Asia Taichung Regional Contest.
- Students Chao-Yuan Huo, Hao-Wei Chang, and Yi-Shiun Chou, guided by Professor Min-Zheng Shieh, won the Gold Medal at the 2025 ICPC Asia Taichung Regional Contest.
- Student Tse-Han Wang, guided by Professor Chien-Chao Tseng, won the Silver Medal at the 2025 Taiwan Innotech Expo Invention Competition.
- Students Yi-Cing Lee and Chih-Yao Lee, guided by Professor Chih-Wei Yi, received the Gold Award at the 2025 A* Awards.
- Student Rui-Quan Zeng, guided by Professor Chi-Yu Li, received the Gold Award at the 2025 A* Awards.
- Student Yi-Hsin Chen, guided by Professor Wen-Hsiao Peng, received the Excellence Award (Doctoral Group) in the 18th Topco Scientific Paper Award—AI Application Paper Competition.
- Student Pin-Lun Chen, guided by Professors Wei-Chen Chiu and Yi-Ting Chen, received the Special Excellence Award (Master's Group – AI Technology Development and Application) in the 18th Topco Scientific Paper Award—AI Application Paper Competition.
- Student Yu-Jou Weng, guided by Professors Jason Yi-Bing Lin and Min-Zheng Shieh, received the Special Excellence Award (Master's Group – AI Technology Development and Application) in the 18th Topco Scientific Paper Award—AI Application Paper Competition.

- Student Min-Hsuan Wang, guided by Professor Jason Yi-Bing Lin, received the Excellence Award (Master's Group – AI Technology Development and Application) in the 18th Topco Scientific Paper Award—AI Application Paper Competition.
- Student Chia-Han Yeh, guided by Professor Ping-Chun Hsieh, received the Excellence Award (Master's Group – AI Technology Development and Application) in the 18th Topco Scientific Paper Award—AI Application Paper Competition.
- Student Chia-Yu Liang, guided by Professor Yi-Ju Tseng, received the Honorable Mention (Master's Group – AI Technology Development and Application) in the 18th Topco Scientific Paper Award—AI Application Paper Competition.
- Student Ardian Umam, guided by Professors Yen-Yu Lin and Jen-Hui Chuang, received the Honorable Mention in the Doctoral Dissertation category of the 18th IPPR Thesis Awards.
- Student Yi-Hsin Chen, guided by Professor Wen-Hsiao Peng, received the Honorable Mention in the Doctoral Dissertation category of the 18th IPPR Thesis Awards.
- Student Yong-Lin Tsai, guided by Professor Ching-Chun Huang, received the Honorable Mention in the Master's Thesis category of the 18th IPPR Thesis Awards.
- Student Hao-Chien Hsueh, guided by Professor Ching-Chun Huang, received the Honorable Mention in the Master's Thesis category of the 18th IPPR Thesis Awards.
- Students Wei-Chih Yin, Pin-Hsuan Chou, and Chao-Chi Liao, guided by Professors Yu-Chee Tseng and Cheng-Kuan Lin, won First Place in the BIV-Priv track at the 2025 VizWiz Grand Challenge Workshop.
- Student Yi-Jing Wu, guided by Professor Ching-Chun Huang, received the 2024 College Student Research Creativity Award from the National Science and Technology Council.
- Student Yen-Yi Chen, guided by Professor I-Chen Wu, received the 2024 College Student Research Creativity Award from the National Science and Technology Council.

攜手共育未來菁英 — 華仁館（資訊二館）啟航計畫



資訊二館模擬圖 (陳柏宏建築師著作)

交大資訊自博愛校區奠基在光復校區茁壯，走過半世紀風華，培育無數資訊菁英，見證並引領台灣科技的蓬勃發展。從人工智慧、資安到雲端運算、半導體，我們的師生與系友屢創高峰，讓交大資訊成為亞洲頂尖、享譽國際的學術殿堂。

如今隨著資訊技術的突飛猛進，我們需肩負更大的使命，致力培育引領未來的科技人才。然而，我們的館舍仍停留在過去，難以承載蓬勃發展的研究與教學需求，限制了無限可能。為迎接挑戰，我們規劃興建全新大樓，打造跨領域合作、產學共創與創新研發的基地—資訊二館。這個新的大樓將成為提升學術研究、促進技術交流與應用落地的搖籃，並讓未來的工程師、科學家與創業家擁有更卓越的學習與成長環境，勇敢迎向科技新浪潮。

我們誠摯邀請您共襄盛舉，以熱忱支持資訊系邁向新高峰，為台灣乃至全球科技發展注入無限可能！

您的每一份心意，都是奠定未來的基石。讓我們共創卓越，點亮科技新未來！

捐款網址：<https://cs2-fundraising.cs.nycu.edu.tw/>



募款計畫 資心專案／出國交換獎學金

本院肩負培育國內外資訊領域一流人才重任，全球競爭日趨白熱，若在學生時期及早培養國際觀與視野，更能提升未來的競爭力。是以本院積極推動「資心專案/交換生募款計畫」，校友慷慨溫暖捐款，期能提升在校學子國際化競爭力，燃起更多學生參與國際舞台並貢獻台灣的想法。自2014年起已有近78位學生受惠於本募款計畫，2023至2024年間目前共有15位學生至瑞士蘇黎世聯邦理工學院、捷克布拉格捷克理工大學、德國慕尼黑工業大學、阿亨工業大學、美國伊利諾大學香檳分校、卡內基美隆大學等姐妹校交換。



募款計畫 資訊學院企業講座

資通訊產業是台灣高科技發展的核心支柱，而科技人才則是推動產業升級與創新的關鍵引擎。然而，大學目前正面臨多重挑戰。在資訊領域，教授的起薪普遍低於其所培育的碩士畢業新鮮人，使得碩士生進一步攻讀博士的意願降低，博士生投入教職的比例也呈現逐年下降的趨勢。另一方面，全台約三分之一的大學專任教師即將屆齡退休，師資斷層的風險日益浮現，對高階科技人才的培育品質與產量皆構成潛在影響。



為積極延攬並留住優秀青年學者投入教學與研究工作，本院特別推動「企業講座獎勵計畫」。本計畫透過企業捐款設置獎助金，不僅協助新進教師發展其學術職涯與穩定留任，同時也獎勵現職表現卓越的教授。獲獎教師將冠以企業名稱，以彰顯產學攜手培育人才的象徵意義。

本院期盼藉由企業的長期參與與支持，激勵優秀師資持續投入教學與研究，共同培育下一代科技領導人才，強化我國高等教育體系的永續發展與全球競爭力。

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1140828	財團法人 91APP 基金會	Q540178 資工系學務發展 - 梅竹黑客松	新台幣 60,000 元
1140825	中國信託商業銀行	Q540178 資工系學務發展 - 梅竹黑客松	新台幣 20,000 元

捐贈日期	捐贈人	捐款計畫	捐贈
1140820	熱心校友	Q540178 資工系學務發展	新台幣 98,593 元
1140820	黃鈺惠	Q540178 資工系學務發展	新台幣 400 元
1140820	邱繼弘	H500007 資訊二館捐款計畫	新台幣 10,000 元
1140815	資工 80 級李躍欽	H500007 資訊二館捐款計畫	新台幣 40,000 元
1140731	尊博科技股份有限公司	Q540178 資工系學務發展 -2025 年梅竹黑客松	新台幣 110,000 元
1140722	黃鈺惠	Q540178 資工系學務發展	新台幣 400 元
1140722	熱心校友	Q540178 資工系學務發展	新台幣 98,593 元
1140715	陳建志	Q540178 資工系學務發展	新台幣 10,000 元
1140715	熱心校友	Q540178 資工系學務發展	新台幣 3,000 元
1140715	熱心校友	H500007 資訊二館捐款計畫	新台幣 3,000 元
1140714	亞美陸陽科技有限公司	H500007 資訊二館捐款計畫	新台幣 300,000 元
1140701	黃冠華	Q540178 資工系學務發展	新台幣 600,000 元
1140630	熱心校友	Q540178 資工系學務發展專案	新台幣 5,000 元
1140626	熱心校友	Q540178 資工系學務發展	新台幣 98,593 元
1140620	黃鈺惠	Q540178 資工系學務發展	新台幣 400 元
11406	熱心單位	受贈單位：資訊工程學系	偵查型多旋翼無人機 (EYT Skymini A+T3)1 台
1140610	江泓樂	Q540068 資心專案暨海外實習生 / 交換生募款計畫	新台幣 3,000 元
1140602	王士瑜	Q540068 資心專案暨海外實習生 / 交換生募款計畫	新台幣 3,000 元
1140523	黃鈺惠	Q540178 資工系學務發展	新台幣 400 元
1140515	群聯電子股份有限公司	Q540178 資工系學務發展 - 資工之夜	新台幣 10,000 元
1140428	黃鈺惠	Q540178 資工系學務發展	新台幣 400 元
1140428	李嵩聲	Q540178 資工系學務發展	新台幣 660,000 元
1140421	熱心校友	Q540178 資工系學務發展	新台幣 10,000 元
1140421	北美熱心校友	Q540178 資工系學務發展	新台幣 2,203,094 元

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西元 年 月 日

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