คณะวิศวกรรมศาสตร์ 287
มหาวิทยาลัยเทคโนโลยีราชมงคลศรีวิชัย
เลขรับ 5393
วันที่ 09-10-2569
เวลา 16.16 น.

บันทึกข้อความ

ส่วนราชการ งานวิเทศสัมพันธ์ สำนักงานอธิการบดี โทรศัพท์ ๐-๗๔๓๑-๗๑๔๒, ๐-๗๔๓๑-๗๑๔๑

ที่ - **วันที่** ๙ ตุลาคม ๒๕๖๙

เรื่อง ประชาสัมพันธ์โครงการ 2027 CCU/CoE INTERNATIONAL INTERNSHIP PROGRAM ณ National Chung Cheng University ประเทศไต้หวัน

เรียน หัวหน้าหน่วยงานในสังกัดมหาวิทยาลัยเทคโนโลยีราชมงคลศรีวิชัย

ด้วย National Chung Cheng University (CCU) ประเทศไต้หวัน ได้ประชาสัมพันธ์โครงการ 2027 CCU/CoE International Internship Program ซึ่งเป็นโครงการฝึกงานวิจัยนานาชาติด้านวิศวกรรมและเทคโนโลยี เปิดโอกาสให้นักศึกษาต่างชาติเข้าร่วมฝึกประสบการณ์และดำเนินงานวิจัยร่วมกับคณาจารย์และนักวิจัยของมหาวิทยาลัย โดยมีหัวข้อวิจัยที่ครอบคลุมด้านปัญญาประดิษฐ์ (Artificial Intelligence: AI) วิทยาการคอมพิวเตอร์ วิศวกรรมไฟฟ้า วิศวกรรมเครื่องกล ความมั่นคงปลอดภัยทางไซเบอร์ หุ่นยนต์ ระบบสื่อสาร พลังงานทดแทน วัสดุและกระบวนการผลิต ตลอดจนเทคโนโลยีที่เกี่ยวข้อง โดยโครงการดังกล่าวกำหนดช่วงเวลาฝึกงานระหว่างวันที่ ๑ มีนาคม ถึง ๓๑ ธันวาคม ๒๐๒๗ โดยระยะเวลาฝึกงานและเงื่อนไขการสนับสนุนทุนเป็นไปตามข้อกำหนดของแต่ละหัวข้อวิจัย ทั้งนี้ ผู้สมัครเป็นนักศึกษาระดับปริญญาตรีชั้นปีที่ ๓ ขึ้นไป หรือนักศึกษาระดับบัณฑิตศึกษาเท่านั้นตามรายละเอียดดังแนบ

ในการนี้ งานวิเทศสัมพันธ์ สำนักงานอธิการบดี จึงขอความอนุเคราะห์ท่านประชาสัมพันธ์โครงการดังกล่าวให้แก่อาจารย์ บุคลากร และนักศึกษาภายในคณะหรือหน่วยงานที่มีสาขาวิชาเกี่ยวข้องทราบ สำหรับผู้ที่สนใจสามารถศึกษารายละเอียดหัวข้อวิจัย คุณสมบัติ เอกสารประกอบการสมัคร เงื่อนไขการสนับสนุนทุน และขั้นตอนการสมัครได้ที่เว็บไซต์: https://sites.google.com/view/ccu-coe-internship/home หรือติดต่อสอบถามได้ที่อีเมล: coleng_dia@ccu.edu.tw **โดยมีกำหนดปิดรับสมัครในวันที่ ๓๐ พฤศจิกายน ๒๐๒๖**

จึงเรียนมาเพื่อโปรดพิจารณา

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เรียน คณบดี
- เพื่อโปรดพิจารณา
สำนักงานอธิการบดี ประชาสัมพันธ์โครงการ 2027 CCUCoE INTERNATIONAL INTERNSHIP PROGRAM ณ National Chung Cheng University ประเทศไต้หวัน
- เห็นควรมอบงานวิเทศสัมพันธ์ดำเนินการประชาสัมพันธ์

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ทราบ และมอบ

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รศ.สุรสิทธิ์ ระวังวงศ์
๑๒ ต.ค. ๖๙

สำเนารวม

เรียน คณบดีคณะวิศวกรรมศาสตร์
เรียน คณบดีคณะครุศาสตร์อุตสาหกรรมและเทคโนโลยี
เรียน คณบดีคณะวิศวกรรมศาสตร์และเทคโนโลยี

國立中正大學工學院
College of Engineering
National Chung Cheng University

2027 CCU/COE

INTERNATIONAL INTERNSHIP PROGRAM

Your Research Journey Starts Here

APPLY NOW

LAST APPLICATION DATE

Monday, November 30, 2026

https://sites.google.com/view/ccu-coe-internship

INTERNSHIP ABROAD

- Project-based
- scholarship
- Fee-free
- For graduate school students & university junior students

RESEARCH FIELD

- Computer Science & Information Engineering
- Electrical Engineering
- Mechanical Engineering
- Chemical Engineering
- Communications Engineering

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國立中正大學
National Chung Cheng University

NATIONAL CHUNG CHENG UNIVERSITY

2027 CCU/CoE

INTERNATIONAL INTERNSHIP PROGRAM

COLLEGE OF ENGINEERING (CoE)

國立中正大學工學院
National Chung Cheng University
College of Engineering

2027 CCU/COE INTERNATIONAL INTERNSHIP PROGRAM

In Engineering Field

Building on the success of our annual internship program in engineering, the College of Engineering (CoE) is pleased to welcome international university students to on-campus research internships in 2027.

Through hands-on, project-based work, interns will gain first-hand insight into CCU's research in engineering and technology. Along the way, they will apply their skills, develop new competencies, and immerse themselves in a different culture.

PROGRAM BENIFITS

To have an enjoyable and enriching experience in academic study and exchange their ideas of research with CCU students.

Internship Period

March 1 –December 31, 2027

At least 9 weeks. Individual mentors may have a different definition of Internship Period. For self-supported interns, the period may not be limited as mentioned above. Please refer to each research topic for precise definitions.

FEES

FEE-FREE. The program fee and registration fee will be provided by CoE.

SCHOLARSHIP

Research topics are offered in two types:
(A) Scholarship and (B) self-supported.
For **type-A**, CCU offers a scholarship of around NTD 15,000 per 30 days, covering on-campus accommodation, living expenses, and partial airfare. These are standard items and numbers, and the total amount may be amended by the project mentor based on the program budget and the interns' performance.

PROGRAM ELIGIBILITY

- Graduate school students (master & PhD students)
- University junior students (3rd year or above).
- Those who already complete PhD degree are ***NOT*** eligible to apply.
- Passport holders of People's Republic of China, Hong Kong, or Macau are ***NOT*** eligible to apply.
- Current degree-seeking students, exchange, and visiting students in Taiwanese educational institutions are ***NOT*** eligible to apply.

APPLICATION MATERIALS

1. Online Application Form
2. Curriculum Vitae in PDF format
3. Official Transcripts
4. Letter of Recommendation in PDF format
5. Certificate of language proficiency
6. Research Plan in PDF format
7. Copy of Passport (Bio-page)
8. Head-shot Photo in JPG format (at least 300 KB files ize, 826X1062 pixels.)
9. Other Supplementary Documents(Optional)

APPLICATION

- Applicants should read the requirements of each research topic carefully, complete the online application form, prepare **application materials**, and send them in a ZIP-compressed file to coleng_dia@ccu.edu.tw.
- The title of the E-Mail please be marked with "**Application for 2027 CCU/COE International Internship**". All the intern research topics and their requirements are listed as follows.
- **Application deadline: Nov. 30, 2026**
- More detailed information about application can be found on the website https://sites.google.com/view/ccu-coe-internship/home

CONTACT

+886-5-2720411 ext. 23003, 23005
coleng_dia@ccu.edu.tw
No.168, Sec. 1, University Rd., Minhsiung, Chiayi 621301, Taiwan (R.O.C.)

INTERN RESEARCH TOPICS

Project Number	P1
Project Title	Optimal Transport and Information Geometry: Applications in Artificial Intelligence
Description of the Research	This project links optimal transport and information geometry to modern AI. We use the Monge-Kantorovich formulation, Wasserstein metrics, divergence functions, and entropy-regularized transport. With these tools, we study how the geometry of probability distributions can guide learning and data analysis. The project may also connect these tools to differential privacy. We apply Wasserstein-based and divergence-based measures to study how the noise added for privacy affects data and model outputs. The same measures help us analyze the privacy-utility trade-off. We focus on methods that remain practical for high-dimensional data. Entropy regularization and efficient approximations make transport computations faster and more stable. The internship suits students with a solid background in mathematics and probability. It is ideal for those who enjoy theory and also want to implement and test methods on real datasets.
Mentor in CCU	■ Asst. Prof. Tsung-Wei Chiang ■ Department of Computer Science and Information Engineering, National Chung Cheng University, Taiwan. ■ E-Mail: twchiang@ccu.edu.tw ■ Website: https://sites.google.com/view/twchiang
Expected Student Level	■ Post-graduate student ■ Third/forth-year undergraduate senior student
Category	■ Scholarship ■ Self-supported
Internship Period	At least 12 weeks. Ideally 16 weeks, between March 1 and December 31, 2027

Project Number	P2
Project Title	Robust Real-Time AI Perception for High-Speed UAV Imagery
Description of the Research	Unmanned aerial vehicles (UAVs) flying at high speed must detect, track, and recognize objects of interest in real time. Most public drone datasets come from slow, stable flight, so AI models trained on them often lose accuracy at high speed. This project studies how AI can perform these vision tasks reliably on fast-moving UAVs. High speed creates several difficulties for AI. Motion blur, rolling-shutter distortion, and vibration degrade images. Objects look tiny at long range and then grow quickly. Each object may stay in view for only a few frames, and large motion between frames confuses trackers. Latency is critical. At 30 m/s, a 100 ms delay means the UAV has moved 3 m, yet onboard computing power is limited. Labeled high-speed data are scarce. The intern will first build a benchmark that measures how detection and tracking accuracy change with flight speed. It will use public datasets (VisDrone and UAVDT) and simulated high-speed flights. The intern will then develop a real-time AI pipeline. Options include YOLO-family and RT-DETR detectors, ByteTrack and BoT-SORT trackers, blur-robust training, and model compression for edge devices. Calibrated confidence scores will support later fusion across a UAV team. Federated learning will be explored to improve models without sharing raw images. We favor practical methods with open-source code and published papers. The internship suits students with good Python skills and basic knowledge of deep learning and computer vision. Experience with PyTorch or TensorFlow is a plus.
Mentor in CCU	■ Asst. Prof. Tsung-Wei Chiang ■ Department of Computer Science and Information Engineering, National Chung Cheng University, Taiwan. ■ E-Mail: twchiang@ccu.edu.tw ■ Website: https://sites.google.com/view/twchiang
Expected Student Level	■ Post-graduate student ■ Third/forth-year undergraduate senior student
Category	■ Scholarship ■ Self-supported
Internship Period	At least 12 weeks. Ideally 16 weeks, between March 1 and December 31, 2027

Project Number	P3
Project Title	Generative Information Retrieval
Description of the Research	We are seeking highly motivated students and researchers with a strong interest in Generative Information Retrieval (GIR). GIR is an emerging paradigm that leverages large language models and generative AI to improve information retrieval, ranking, and question answering. Interns will participate in cutting-edge research on topics such as generative retrieval models, multimodal retrieval, retrieval-augmented generation (RAG), large language models (LLMs), and AI-driven search systems. Responsibilities include conducting literature reviews, developing and implementing deep learning models, performing experiments, analyzing results, and contributing to research publications. This internship provides an excellent opportunity to work with an active research team, gain hands-on experience in state-of-the-art AI technologies, and contribute to high-impact international research projects.
Mentor in CCU	■ Prof. Chih-Yi Chiu ■ Department of Computer Science and Information Engineering, National Chung Cheng University, Taiwan. ■ E-Mail: cychiu@ccu.edu.tw
Expected Student Level	■ Post-graduate student ■ Third/forth-year undergraduate senior student
Category	■ Scholarship ■ Self-supported
Internship Period	At least 12 weeks between March 1 and December 31, 2027

Project Number	P4
Project Title	Trustable Artificial Intelligence for Critical Applications and 6G Security in Quantum Era
Description of the Research	Artificial Intelligence (AI), particularly Large Language Models (LLMs), generative AI, and multimodal models, together with 6G networking and quantum computing, accelerate intelligent and autonomous systems. However, these advances introduce security and safety risks, including adversarial attacks, prompt injections, jailbreaks, data leakage, model manipulation, and AI-enabled cyberattacks. In critical applications such as SCADA, intelligent transportation systems, and communication networks, compromised AI or inadequate guardrails may lead to serious cyber-physical consequences and privacy violations. This project focuses on securing emerging AI-enabled systems through AI security, LLM security and guardrails, trustworthy AI, and intelligent cyber defense. Key research topics include: (1) AI for Cybersecurity; (2) Cybersecurity for AI and LLMs; (3) LLM and Guardrails; (4) 6G and UAV Security; (5) Space and Quantum Security; and (6) Trustworthy AI for Critical Applications. **Preferred Intern Education Level** - Third-year undergraduate students or above - Graduate candidates (had Bachelor/ Master) - Ph.D. students **You can refer** -The details of past interns' activity: https://sites.google.com/view/teepcislab
Mentor in CCU	■ Assoc. Prof. Van-Linh Nguyen ■ Department of Computer Science and Information Engineering, National Chung Cheng University, Taiwan ■ E-Mail: nvlinh@ccu.edu.tw
Expected Student Level	■ Post-graduate student ■ Third/forth-year undergraduate senior student
Category	■ Scholarship ■ Self-supported
Internship Period	At least 12 weeks between March 1 and December 31, 2027

Project Number	P5
Project Title	Wireless and UAV Security: Technologies and Applications
Description of the Research	This project investigates advanced cybersecurity technologies for future 6G wireless networks, ISAC, Sensing, and UAV-enabled applications. It focuses on secure and resilient communications, AI-driven threat detection and defense, anti-jamming techniques, and UAV network security. The project also explores practical UAV applications, including smart cities, emergency communications, sensing, and intelligent wireless services. **About our lab**: The lab has been the home of many international students. In 2023-2026, there were a total of 45 international students from 11 countries to do internships at the lab. Several interns have successfully submitted their research at our lab to prestigious conferences/journals. **You can refer** — The details of past interns' activity: https://sites.google.com/view/teepcislab — Lab website: https://ccucyberseclab.github.io
Mentor in CCU	■ Assoc. Prof. Van-Linh Nguyen ■ Department of Computer Science and Information Engineering, National Chung Cheng University, Taiwan ■ E-Mail: nvlinh@ccu.edu.tw
Expected Student Level	■ Post-graduate student ■ Third/forth-year undergraduate senior student
Category	■ Scholarship ■ Self-supported
Internship Period	At least 12 weeks between March 1 and December 31, 2027

Project Number	P6
Project Title	Lidar and Camera fusion for autonomous driving
Description of the Research	This project revolves around the integration of lidar and camera sensor data, aiming to develop robust algorithms for enhanced perception and decision-making in self-driving systems. Interns will engage in the fusion of lidar and camera inputs, leveraging Python and advanced machine learning models. The primary objectives include developing algorithms for sensor data calibration, point cloud processing and image processing to create a comprehensive and accurate representation of the vehicle's surroundings. The primary objective is to develop and optimize algorithms for efficiently processing and interpreting the multi-modality. This includes tasks such as semantic segmentation, feature extraction, and object recognition, all of which are pivotal for the accurate perception of the vehicle's surroundings.
Mentor in CCU	■ Prof. Jui-Chiu Chiang ■ Department of Electrical Engineering, National Chung Cheng University, Taiwan ■ E-Mail: rachel@ccu.edu.tw
Expected Student Level	■ Third/forth-year undergraduate senior student
Category	■ Scholarship ■ Self-supported
Internship Period	At least 12 weeks between March 1 and December 31, 2027

Project Number	P7
Project Title	Talk to Your Drone: Building an AI Flight System with ChatGPT
Description of the Research	The project, titled "Talk to Your Drone: Building an AI Flight System with ChatGPT," focuses on collaboratively exploring how Large Language Models (LLMs) can be applied to develop an intelligent drone system capable of understanding and executing human commands. The main objective of this project is to integrate LLM-based natural language understanding with unmanned aerial vehicle (UAV) control and autonomous navigation technologies. Instead of relying only on traditional remote controllers or predefined flight commands, users will be able to interact with the drone through natural-language instructions, such as "fly to the designated area," "search for a specific object," or "inspect the surroundings and report what you observe." The LLM will interpret these instructions and translate them into executable flight actions and mission plans.
Mentor in CCU	■ Assoc. Prof. Chao-Yang Lee ■ Department of Electrical Engineering, National Chung Cheng University, Taiwan ■ E-Mail: chaoyang@ccu.edu.tw
Expected Student Level	■ Post-graduate student ■ Third/forth-year undergraduate senior student
Category	■ Scholarship
Internship Period	At least 16 weeks between March 1 and December 31, 2027

Project Number	P8
Project Title	Computer vision applications based on deep learning techniques
Description of the Research	This project is to do researches on computer vision based on the modern deep learning (machine learning) techniques. In this research, you will learn deep learning techniques such as CNN, RNN, LSTM, AE, VAE, GCN, Transformer, etc. The possible applications and topics include: (1) 3D human skeleton extraction, (2) fine-grained skeleton-based action recognition or diseases diagnosis (e.g., dementia, Parkinson), (3) object (head/vehicle/human/object) pose estimation from a single RGB image, (4) 3D human mesh model reconstruction from a single image, (5) robotic grasp pose estimation from 3D point cloud data, (6) applications of 3DGS (Gaussian splatting), (7) AI-generated content (AIGC), such as Text-to-Image, Text-to-Motion generation, and VLA (Visual Language Action), (8) elderly caring application of AIGC, (9) Remote PPG estimation from facial image sequence (10) AF (Atrial Fibrillation) detection from facial video, (11) Carotid artery stenosis (CAS) measurement based on smart phone. The intern student is expected to have some preliminary knowledge on NN (neural network) or deep learning and skilled in Python programming. He/She will learn how to apply state-of-the-art deep learning techniques to solve the indicated problems. For more detail about my topics, please visit my Youtube video at: https://youtu.be/tIwenpyFRhw
Mentor in CCU	■ Prof. Wen-Nung Lie ■ Department of Electrical Engineering, National Chung Cheng University, Taiwan. ■ E-Mail: ieewnl@ccu.edu.tw
Expected Student Level	■ Post-graduate student ■ Third/forth-year undergraduate senior student
Category	■ Scholarship
Internship Period	At least 12 weeks (or, 3 months) between March 1 and December 31, 2027. However, 4-6 months are preferred.

Project Number	P9
Project Title	Ultra-Low-Voltage 16-nm FinFET SRAM Design with Power-Gating-Aware Stability Verification
Description of the Research	This internship focuses on the design and verification of ultra-low-voltage SRAM in 16-nm FinFET technology. The intern will work on few of the following topics: (1) design and simulate 6T SRAM cells in 16-nm FinFET using Cadence tools; (2) extract static and dynamic noise margins for read, write, and hold operations; (3) run Monte Carlo and PVT corner simulations to evaluate how process variation affects cell stability at low supply voltage; (4) model the effect of power gating on the virtual supply and its impact on noise margin; (5) study how fin-count selection changes the balance between read and write stability; (6) design and evaluate read- and write-assist circuits The student is expected to have a basic background in circuit design and some familiarity with SPICE simulation. **Preferred Intern Education Level** - Third/forth-year undergraduate senior student - Post-graduate student - Ph.D. students
Mentor in CCU	■ Asst. Prof. Nidhi ■ Department of Electrical Engineering, National Chung Cheng University, Taiwan ■ E-Mail: nidhis.ccu.edu.tw
Expected Student Level	■ Post-graduate student ■ Third/forth-year undergraduate senior student
Category	■ Scholarship ■ Self-supported
Internship Period	At least 12 weeks between March 1 and December 31, 2027

Project Number	P10
Project Title	Cryogenic CMOS Mixed-Signal Integrated Circuits for Quantum Computing
Description of the Research	Quantum computers need classical electronics operating right next to the qubits at cryogenic temperatures of 4 K to control and read out qubits. Standard CMOS circuits behave very differently in the cold: threshold voltages rise, transistor mismatch worsens, and foundry models calibrated at room temperature are no longer valid. This project develops cryo-CMOS mixed-signal circuits for qubit readout, with a focus on data converters. Interns will work on one or more of the following topics: (1) Cryogenic device modeling: adapting compact transistor models (BSIM) to cryogenic temperatures using published measurement data; (2) Cryogenic comparators design and simulation; (3) developing digital correction and redundancy techniques that compensate for cryo-induced errors; The student is expected to have a basic background in circuit design and some familiarity with SPICE simulation. **Preferred Intern Education Level** - Third/forth-year undergraduate senior student - Post-graduate student - Ph.D. students
Mentor in CCU	■ Asst. Prof. Nidhi ■ Department of Electrical Engineering, National Chung Cheng University, Taiwan ■ E-Mail: nidhis.ccu.edu.tw
Expected Student Level	■ Post-graduate student ■ Third/forth-year undergraduate senior student
Category	■ Scholarship ■ Self-supported
Internship Period	At least 12 weeks between March 1 and December 31, 2027

Project Number	P11
Project Title	Impulse Radar Imaging System, mmWave/RF Intergrated Circuit design and Energy Harvesting
Description of the Research	Four investigation topics over Ultra-Wideband Impulse Radar imaging system: 1. A back-projection imaging algorithm used to reconstruct the radar image. 2. The studies of the transmitting and receiving circuits and Vivaldi antenna array. 3. mmWave/RF integrated circuit design such as PA and LNA, by CMOS process or III-V technology. Energy harvesting within wireless communications environment
Mentor in CCU	■ Assoc. Prof. Janne-Wha Wu ■ Department of, Electrical Engineering, National Chung Cheng University, Taiwan ■ E-Mail: jwwu@ccu.edu.tw
Expected Student Level	■ Post-graduate student ■ Third/forth-year undergraduate senior student
Category	■ Scholarship ■ Self-supported
Internship Period	At least 10 weeks between March 1 and December 31, 2027

Project Number	P12
Project Title	Renewable Energy Integration: Modern Power System Analyses, State Estimation, Power Conversion Technologies, Intelligent Control for Renewable Energy Resources, Fault Diagnosis, Forecasting Technologies for Renewable Power Generation
Description of the Research	The students will learn the research topics about renewable energy integration, which includes one of the following issues: ➢ Wind farm modeling and control, Frequency and voltage control by renewable power generation resources ➢ Fault diagnosis for solar power systems ➢ Artificial intelligence applications on renewable power systems, including forecasting and fault diagnosis ➢ Power system protection and relay setting in modern grids ➢ Control technologies for voltage source converter, including grid forming and grid following technologies ➢ Inertia estimation and supporting ➢ New state estimation technologies ➢ Power system reliability and resiliency The detailed information for the Renewable Energy and Power System Lab led by Prof. Wu https://repsly.ccu.edu.tw/?Lang=en
Mentor in CCU	■ Distinguished Prof. Yuan-Kang Wu ■ Department of Electrical Engineering, National Chung Cheng University, Taiwan ■ E-Mail: allenwu@ccu.edu.tw
Expected Student Level	■ Third/forth-year undergraduate senior student **Only accept students who intend to pursue a master's degree in our Lab.**
Category	■ Scholarship
Internship Period	At least 15 weeks between March 1 and December 31, 2027

Project Number	P13
Project Title	Development of electrodes for anion exchange membrane water electrolysis
Description of the Research	Hydrogen production using renewable energy is important in moving forward to 2050 net zero emissions. The anion exchange membrane water electrolysis using non-noble metallic catalysts, reducing the cost of producing hydrogen. The efficiency depends on the reaction kinetics of both anode and cathode electrodes. Students in this project will learn the development of electrode and operation of water electrolysis.
Mentor in CCU	■ Prof. Yong-Song Chen ■ Department of Mechanical Engineering, National Chung Cheng University, Taiwan ■ E-Mail: imeysc@ccu.edu.tw
Expected Student Level	■ Post-graduate student ■ Third/forth-year undergraduate senior student
Category	■ Scholarship
Internship Period	At least 9 weeks between March 1 and December 31, 2027

Project Number	P14
Project Title	Computational Modeling and Validation of Polycyclic Aromatic Hydrocarbons and Soot for TRF-Ethanol Blends
Description of the Research	The global transition to sustainable transportation requires integrating advanced oxygenated biofuels, such as ethanol, with conventional gasoline. Toluene Reference Fuels (TRF) serve as highly effective gasoline surrogates for emulating fundamental combustion characteristics. However, simulating the complex chemical kinetics of TRF-ethanol blends within computational fluid dynamics (CFD) frameworks remains computationally prohibitive. This project focuses on developing and validating a reduced chemical kinetic mechanism of TRF/ethanol that significantly reduces computational expense while preserving high fidelity in predicting multidimensional combustion behavior. The rapid advancement of alternative fuel blends demands robust predictive modeling to minimize harmful emissions without compromising thermal efficiency. Consequently, the precise prediction of polycyclic aromatic hydrocarbon (PAH) evolution and soot inception pathways remains a primary objective in contemporary combustion research. In summary, this project seeks candidates with a strong interest in the following areas: (1) Computational Fluid Dynamics (CFD) modeling; (2) Chemical kinetic mechanism reduction; (3) Soot formation dynamics in co-flow diffusion flames; (4) Alternative biofuels and TRF combustion chemistry; (5) Numerical model validation utilizing published experimental data.
Mentor in CCU	■ Asst. Prof. Anurag Dahiya ■ Department of Mechanical Engineering, National Chung Cheng University, Taiwan ■ E-Mail: anurag@ccu.edu.tw ■ Lab website: https://tec-ccu.github.io/TEC-LAB/
Expected Student Level	■ Post-graduate student ■ Third/forth-year undergraduate senior student
Category	■ Scholarship
Internship Period	At least 12 weeks between March 1 and December 31, 2027

Project Number	P15
Project Title	Experimental and Numerical Investigation of Plasma-Assisted Ammonia Cracking for Hydrogen Production
Description of the Research	Ammonia is considered a promising hydrogen carrier because of its high hydrogen content and established infrastructure for storage and transportation. Plasma-assisted ammonia cracking provides a potential route for hydrogen production at relatively low operating temperatures; however, the interactions among plasma discharge characteristics, reactor heat transfer, gas-phase chemistry, and catalyst performance remain insufficiently understood. An atmospheric-pressure plasma reactor is developed to generate a stable discharge for ammonia decomposition, and catalysts are incorporated into the reactor to enhance ammonia conversion and hydrogen production. In parallel, a plasma fluid model coupled with a gas-flow and heat-transfer model is developed to describe the spatial and temporal evolution of charged species, electron energy, gas temperature, and reactive species during plasma-assisted ammonia cracking. This work demonstrates a systematic approach for optimizing plasma-assisted ammonia cracking reactors and provides a basis for the development of carbon-material-assisted hydrogen production technologies.
Mentor in CCU	■ Assoc. Prof. Kun-Mo Lin ■ Department of Mechanical Engineering, National Chung Cheng University, Taiwan ■ E-Mail: imekml@ccu.edu.tw; kmlin.tw@gmail.com
Expected Student Level	■ Post-graduate student ■ Third/forth-year undergraduate senior student
Category	■ Scholarship ■ Self-supported
Internship Period	At least 9 weeks between March 1 and December 31, 2027

Project Number	P16
Project Title	Characterization of a low-pressure discharge for semiconductor manufacturing
Description of the Research	Plasma technology plays a crucial role in modern semiconductor manufacturing, enabling precise, efficient, and scalable processes. In microelectronics fabrication, plasma is widely used for dry etching (PEALE), deposition (PECVD/PEALD), surface modification, and cleaning. Plasma etching is one of the most critical steps for defining nanoscale patterns on silicon wafers. By generating reactive species such as ions and radicals, plasma can selectively remove material with excellent anisotropy, allowing the creation of vertical sidewalls and high-aspect-ratio structures essential for advanced devices. Compared to wet chemical etching, plasma etching offers superior process control, uniformity, and compatibility with small feature sizes. In this project, participants are going to work with a low-pressure discharge system (CCP or ICP) using instruments to measure discharge parameters and conduct theoretical analyses using numerical simulations. Specific tasks will be assigned to resolve engineering issues and contribute to the ongoing project with domain knowledge learned in lecture courses.
Mentor in CCU	■ Assoc. Prof. Kun-Mo Lin ■ Department of Mechanical Engineering, National Chung Cheng University, Taiwan ■ E-Mail: imekml@ccu.edu.tw; kmlin.tw@gmail.com
Expected Student Level	■ Post-graduate student ■ Third/forth-year undergraduate senior student
Category	■ Scholarship ■ Self-supported
Internship Period	At least 9 weeks between March 1 and December 31, 2027

Project Number	P17
Project Title	Study of Metal 3D Printing
Description of the Research	Metal additive manufacturing, also known as metal 3D printing, enables the production of complex metal parts without many of the constraints of traditional manufacturing processes. Our lab is recruiting talented individuals interested in the following topics: (1) Process analysis of metal 3D printing: The primary objective of this project is to perform a comprehensive parametric study of the Directed Energy Deposition (DED) and Selective Laser Melting (SLM) processes for stainless steel. This will involve an in-depth examination of the effects of various scanning parameters on the quality of printed lines, surfaces, and bodies. (2) Failure analysis of metal 3D printing: The project's main goal is to conduct a series of mechanical tests on stainless steel samples fabricated using DED and SLM processes. The study will examine material properties, metallurgical micrographs and SEM images in detail to understand the failure mechanisms of metal 3D-printed materials.
Mentor in CCU	■ Prof. Pai-Chen Lin ■ Department of Mechanical Engineering, National Chung Cheng University, Taiwan. ■ E-mail: imepcl@ccu.edu.tw
Expected Student Level	■ Post-graduate student ■ Third/forth-year undergraduate senior student
Category	■ Scholarship ■ Self-supported
Internship Period	At least 10 weeks (2 months) between March 1 and December 31, 2027

Project Number	P18
Project Title	Physical AI for Adaptive and Autonomous Manufacturing Systems
Description of the Research	At DIL-X (Deep Intelligence Lab for X), guided by our philosophy "Intelligence with Purpose, Innovation with Heart," we explore the convergence of manufacturing, AI, and physical systems to advance the Triple Transformation of manufacturing—digital, green, and human-centric transformation. This project focuses on Physical AI for adaptive and autonomous manufacturing, integrating physics-informed machine learning, foundation models, multimodal sensing, and intelligent decision-making, with applications in machining, additive manufacturing, and semiconductor manufacturing. Potential research areas include Physical AI, physics-informed AI, manufacturing foundation models, multimodal intelligence, quantum technologies in manufacturing, zero-defect manufacturing, human-in-the-loop AI, and intelligent process monitoring and control. Students from Mechanical Engineering, Mechatronics, Computer Science, AI, Robotics, and related disciplines are welcome to explore interdisciplinary research toward intelligent, sustainable, adaptive, and human-centered manufacturing systems. **Preferred Intern Education Level** - Third/forth-year undergraduate senior student - Post-graduate student - Ph.D. students For related information:https://dil-x.github.io/
Mentor in CCU	■ Asst. Prof. Ayush Pratap ■ Department of Mechanical Engineering, National Chung Cheng University, Taiwan ■ E-Mail: ayushpratap@ccu.edu.tw
Expected Student Level	■ Post-graduate student ■ Third/forth-year undergraduate senior student
Category	■ Scholarship
Internship Period	At least 12 weeks between March 1 and December 31, 2027

Project Number	P19
Project Title	Embodied Machine Intelligence for Cognition, Emotion, and Human–Robot Interaction
Description of the Research	This project explores Embodied Intelligence and Cognitive Robotics, with emphasis on robotic cognition, artificial emotion, robopsychology, and human-robot interaction. It investigates how intelligent robots can perceive, reason, learn, recognize and express emotions, understand human responses, and adapt their behavior within physical and social environments. The research combines Embodied AI, cognitive robotics, multimodal perception, affective intelligence, and digital twins to explore the development of adaptive and human-centered robotic systems. Potential topics include robotic cognition and emotion, robopsychology, affective computing, Embodied AI, Vision-Language-Action (VLA) models, human-robot interaction, digital twins, robot behavior, ethics, safety, and governance. Students from Mechanical Engineering, Mechatronics, Robotics, Computer Science, AI, Psychology, Law, and related disciplines are welcome. Students interested in robot behavior, emotion, human-robot relationships, and psychological, ethical, and legal frameworks for intelligent robots are particularly encouraged to apply. **Preferred Intern Education Level** - Third/forth-year undergraduate senior student - Post-graduate student - Ph.D. students For related information:https://dil-x.github.io/
Mentor in CCU	■ Asst. Prof. Ayush Pratap ■ Department of Mechanical Engineering, National Chung Cheng University, Taiwan ■ E-Mail: ayushpratap@ccu.edu.tw
Expected Student Level	■ Post-graduate student ■ Third/forth-year undergraduate senior student
Category	■ Scholarship
Internship Period	At least 12 weeks between March 1 and December 31, 2027

Project Number	P20
Project Title	Design of computer-aided diagnosis combined with Hyperspectral Imaging for bio-medical applications
Description of the Research	Most of the computer-aided diagnosis (CAD) models developed in the recent years use only RGB images which has only three different color bands. One of the advanced non-invasive techniques used in clinical research is hyperspectral imaging (HSI), which captures data across hundreds of narrow, contiguous bands, each representing a distinct portion of the electromagnetic spectrum. This allows for detailed analysis of tissue characteristics, making HSI a powerful tool in medical diagnostics. This project will utilize various machine learning models, including YOLOv5, YOLOv8, R-CNN, Faster R-CNN etc, to detect and CNN, SVM and Random forest etc for multiple biomedical applications. It will make use of two models of the white-light images (WLI) model and the hyperspectral narrowband images (HSI-NBI) model. These models will be generated through a conversion algorithm referred to as the spectrum-aided vision enhancer (SAVE). The main goal will be to discover early stage bio-markers for effective prognosis. The evaluation of model performance will be conducted using the created confusion matrix and five important indicators: precision, recall, F1-score, mAP, and the confusion matrix of the trained model.
Mentor in CCU	■ Prof. Hsiang-Chen Wang ■ Department of Mechanical Engineering, National Chung Cheng University, Taiwan ■ E-Mail: hcwang@ccu.edu.tw
Expected Student Level	■ Post-graduate student ■ Third/forth-year undergraduate senior student
Category	■ Scholarship
Internship Period	At least 12 weeks between 12 and 25 weeks

Project Number	P21
Project Title	Smart Sensing Technology for Smart Manufacturing
Description of the Research	At the AISC Lab, our mission is to transform production through three core pillars: 1. Smart Tool Holders: We develop advanced smart tool holders that monitor real-time cutting dynamics. By integrating sensors directly into the tooling, we gain high-fidelity insights into the machining process, significantly boosting precision and production quality. 2. AI-Driven Smart Manufacturing: Recognizing that AI is only as good as its data, we focus on signal processing to ensure sensor accuracy. Our work bridges the gap between raw data and reliable AI models, optimizing modern manufacturing through robust, data-driven intelligence. 3. Robotics & Digital Twins: We leverage Digital Twin modeling and Reinforcement Learning to advance robotic automation. By creating high-accuracy virtual replicas, we train robots to master complex missions autonomously and efficiently. We welcome students who are passionate about these topics and eager to contribute to the future of smart manufacturing technology.
Mentor in CCU	■ Distinguished Prof. Her-Terng Yau ■ Department of Mechanical Engineering, National Chung Cheng University, Taiwan ■ E-Mail: htyau@ccu.edu.tw
Expected Student Level	■ Post-graduate student ■ Third/forth-year undergraduate senior student
Category	■ Scholarship ■ Self-supported
Internship Period	At least 9 weeks between March 1 and December 31, 2027

Project Number	P22
Project Title	Study of Water splitting, Electrocatalytic HER and OER, Ammonia Cracking and Li-based Battery Applications
Description of the Research	The research will primarily concentrate on the study of electrocatalysts and nanoarchitectured materials with the aim of exploring innovative applications in the realm of energy conversion and storage. These applications encompass batteries, hydrogen Production, Ammonia dissociation, fuel cells and supercapacitors.
Mentor in CCU	■ Distinguished Prof. Yuan-Yao Li ■ Department of Chemical Engineering, National Chung Cheng University, Taiwan ■ E-Mail: chmyyl@ccu.edu.tw
Expected Student Level	■ Post-graduate student ■ Third/forth-year undergraduate senior student
Category	■ Scholarship ■ Self-supported
Internship Period	At least 12 weeks between March 1 and December 31, 2027

Project Number	P23
Project Title	Implementing evaluation scenarios in B5G/6G communication of IMT-2030
Description of the Research	This project focuses on building topologies and deriving environmental channel conditions for key scenarios that address the advanced challenges of B5G/6G within the IMT-2030 framework. These scenarios encompass hybrid networks integrating disparate technologies, including fixed, mobile cellular, high-altitude platforms, satellites, and others yet to be defined. A critical aspect of this project is exploring the role of AI-enabled wireless technologies in optimizing network operations, resource allocation, and system performance across these diverse networks. The integration of AI with wireless communication is expected to enhance the adaptability, efficiency, and intelligence of B5G/6G systems, enabling them to meet the demands of increasingly complex scenarios. By leveraging AI, this project aims to model and optimize communication environments dynamically, providing robust solutions for real-world applications. The outcome of this project will serve as a foundation for the realization, visualization, demonstration, evaluation, and calibration of future B5G/6G communication systems within IMT-2030.
Mentor in CCU	■ Prof. Jen-Yi Pan ■ Department of Communications Engineering, National Chung Cheng University, Taiwan, ROC. ■ E-Mail: jypan@ccu.edu.tw
Expected Student Level	■ Post-graduate student ■ Third/forth-year undergraduate senior student
Category	■ Scholarship ■ Self-supported
Internship Period	At least 9 weeks between March 1 and December 31, 2027