NATIONAL CHUNG CHENG UNIVERSITY

2026 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

2026 CCU/COE INTERNATIONAL INTERNSHIP PROGRAM

In Engineering Field

Continuing the yearly internship program in engineering field, the College of Engineering (CoE) offers on-campus research internships for international university students in 2026.

This project-based program provides an opportunity to better understand CCU's research in engineering and technology. Students may practice their skills in the projects, acquire new competence, and experience 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 2 –December 31, 2026** **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 12,000 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 2026 CCU/COE International Internship**". All the intern research topics and their requirements are listed as follows.
- **Application deadline: Nov. 30, 2025**
- More detailed information about application can be found on the website https://sites.google.com/view/ccu-coe-internship/home

CONTACT

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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	Multimodal Analysis and Retrieval
Description of the Research	Multimodal analysis and retrieval focus on integrating and understanding multiple data modalities—such as text, images, audio, and video—to enhance information retrieval and knowledge discovery. Multimodal systems leverage complementary features from different sources, improving accuracy, robustness, and user experience in real-world applications. In this research, we explore advanced deep learning techniques to model complex relationships between heterogeneous modalities. Specifically, we investigate cross-modal embeddings, attention mechanisms, and VLLM to align different feature spaces for efficient retrieval. The work can be applied to diverse fields, including **smart agriculture, smart manufacturing, and digital twin**.
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 2 and December 31, 2026

Project Number	P2
Project Title	Trustable Artificial Intelligence for Critical Applications and 6G Security in Quantum Era
Description of the Research	Artificial Intelligence (AI) technologies (Vision Transformer, ChatGPT, LLM), 6G networking, and quantum computing are the leading forces in bringing the world to the era of better intelligence and full automation. However, the rapid development of such technologies raises concerns that they could be used to damage human life, destroy critical infrastructure, and further violate user privacy. For example, AI power can be exploited to scan the vulnerabilities of critical control systems (SCADA, ITS) or track a target user in a restricted access building, even without physical intrusion. Early detection of security attacks and secure AI models are the top targets of many current research efforts. In short, this project encourages the talents who are interested in the following topics: (1) AI for Cybersecurity; (2) Cybersecurity for AI; (3) 6G security; (4) Space and Quantum security (5) Trustable 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	Asst. 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 2 and December 31, 2026

Project Number	P3
Project Title	Computer Vision And Generative AI for Smart Manufacturing and Autonomous Driving
Description of the Research	Artificial Intelligence is now reaching many applications in our society's life. Many AI-based applications, such as ChatGPT, can provide great answers to many difficult questions beyond average human capability. However, AI has not yet performed well in what humans can do easily, e.g., help robots move smoothly, and drive the car in complex environments. Further, AI requires very large training and extensive computing resources, which not every lab can do. This project aims to propose usable AI and tiny AI to solve our common problems that make AI more reachable and affordable. This topic can cover the following issues: (1) Usable AI: (2) Tiny AI (3) Quantum AI. BE/MSc/PhD students with background in computer vision and software engineering are highly recommended. **About our lab**: The lab has been the home of many international students. In 2023-2025, there were a total of 40 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	Asst. 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 2 and December 31, 2026

Project Number	P4
Project Title	Power Quality Study of Using Artificial Intelligence-based Approaches to Assess Harmonics Produced by Multiple Solar PV and Wind Turbine Generators
Description of the Research	With the growing integration of renewable energy sources, solar photovoltaic (PV) and wind turbine systems are increasingly utilized in modern power grids. These systems introduce significant harmonics when connected to the grid, which impacts power quality. Thus, studying the harmonics produced by multiple solar PV and wind turbine generators is essential. Leveraging artificial intelligence (AI)-based approaches to assess these harmonics represents a promising research direction in the field of power quality. This study includes three aspects. 1. Harmonic Modeling and Detection: Traditional harmonic analysis methods, such as Fourier Transform, can provide insights into frequency components but are often insufficient when dealing with nonlinear and multi-source harmonics. AI, with its ability to process large datasets and self-learn patterns, offers improved accuracy and efficiency in detecting complex harmonic patterns. 2. Harmonic Prediction and Classification: AI can be used to predict harmonics in real-time. AI algorithms can classify harmonic sources by distinguishing between different devices, such as PV systems and wind turbines, based on their unique harmonic signatures. 3. Harmonic Mitigation and Optimization: AI can also aid in designing harmonic filters and optimizing strategies to minimize the impact of harmonics on the power grid..
Mentor in CCU	Prof. Gary Chang, PhD, PE, IEEE Fellow Department of Electrical Engineering, National Chung Cheng University, Taiwan (E-Mail: ieegwc@ccu.edu.tw)
Expected Student Level	■ Post-graduate student ■ Third/forth-year undergraduate senior student (higher priority will go to undergraduate students if more than two applicants)
Category	■ Scholarship ■ Self-supported
Internship Period	At least 10 weeks between March 2 and December 31, 2026

Project Number	P5
Project Title	A Study of Grid Forming Inverter-based Resources for Low-Inertia Microgrid
Description of the Research	Massive integration of inverter-based renewable energy systems (IBRs) has been displacing conventional synchronous generators and causing a reduction in system inertia. IBRs are integrated into power grids through power-electronics inverters. These are generally categorized as (i) grid-following (GFL) and (ii) grid-forming (GFM) inverters. The GFM inverter is a promising emerging technology that generates its own voltage signal and has the capability to regulate the frequency and voltage at the point of interconnection. The simulation-based research project will focus on investigating the potential applications to enhance low-inertia microgrid resilience and stability when the grid is subjected to severe disturbances.
Mentor in CCU	Prof. Gary Chang, PhD, PE, IEEE Fellow Department of Electrical Engineering, National Chung Cheng University, Taiwan (E-Mail: ieegwc@ccu.edu.tw)
Expected Student Level	■ Post-graduate student ■ Third/forth-year undergraduate senior student (higher priority will go to undergraduate students if more than two applicants)
Category	■ Scholarship ■ Self-supported
Internship Period	At least 9 weeks between March 2 and December 31, 2026

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 May 4 and December 31 , 2026

Project Number	P7
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, 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) AI-generated content (AIGC), such as Text-to-Image, Text-to-Video, Text-to-Motion generation, (7) elderly caring application of AIGC, (8) Remote PPG estimation from facial image sequence (9) AF (Atrial Fibrillation) detection from facial video, (10) 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 2 and December 31, 2026. However, 4-6 months are preferred.

Project Number	P8
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 2 and December 31, 2026

Project Number	P9
Project Title	Renewable Energy Integration related Topics: Modern Power System Analyses, AI applications, Intelligent Wind and Solar Power Controls, Fault Diagnosis, New Power Conversion Technologies, Renewable Forecasting Technologies, State Estimation, Optimal Power Flow and Small Signal Modeling
Description of the Research	Students will participate in a wide range of industry-oriented activities, including internships, field testing, site visits, and instructional engagements, primarily within companies in the power and energy sector in Taiwan. The students will learn the research topics about renewable energy integration, which includes one of the following issues: ➢ New wind farm modeling and control ➢ New Fault diagnosis technologies for solar power systems ➢ Artificial intelligence applications on renewable power systems, including forecasting, fault diagnosis and parameter estimation ➢ Power system protection ➢ Control technologies for voltage source converter, including grid forming and grid following technologies ➢ Inertia estimation and supporting ➢ Smart grid control and operation ➢ Modern state estimation technologies ➢ Frequency and voltage control by renewable power generation resources ➢ Energy storage systems ➢ Offshore wind farm planning ➢ 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 https://www.webofscience.com/wos/author/record/1866589
Mentor in CCU	Distinguished Prof. Yuan-Kang Wu Department of Electrical Engineering, National Chung Cheng University, Taiwan (E-Mail: allenwu@ccu.edu.tw) Web of Science: https://www.webofscience.com/wos/author/record/1866589
Expected Student Level	■ Post-graduate student ■ Third/forth-year undergraduate senior student Warm welcome if you would like study master or PhD degree in our Lab
Category	■ Scholarship
Internship Period	At least 15 weeks between March 2 and December 31, 2026

Project Number	P10
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 2 and December 31, 2026

Project Number	P11
Project Title	Numerical Modeling and Experiments of an Atmospheric Pressure Plasma Reactor
Description of the Research	Atmospheric-pressure plasmas have been developed extensively for applications such as wound healing, treatments of cancer cells, and plasma agriculture due to the generation of abundant reactive species being critical for manipulating reaction pathways in different fields. However, it is still challenging to develop a proper plasma source with controlled parameters by experimental measurements because of fast discharge dynamics and complex plasma chemistry. Alternatively, numerical simulations can be used to capture discharge dynamics with detailed chemistry revealed. In this project, a two-dimensional plasma fluid model will be integrated with a two-dimensional gas flow model to predict the dynamic behavior of an atmospheric pressure plasma. The simulated results will be compared with experiments to validate the model. It is a topic involving fluid mechanics, thermofluid science, physics, and chemistry, which is suitable for students with a background in mechanical engineering.
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 2 and December 31, 2026

Project Number	P12
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 using instruments to measure discharge parameters and conduct theoretical analyses. 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 2 and December 31, 2026

Project Number	P13
Project Title	Numerical Simulation of Boiling and Condensation Heat Transfer in Two-Phase Immersion Cooling Systems
Description of the Research	As computing power continues to increase, the cooling demands of AI servers have risen dramatically. Traditional single-phase liquid immersion cooling designs are gradually becoming insufficient to meet these thermal requirements. Therefore, the development of two-phase immersion cooling systems with higher heat-dissipation efficiency has become an inevitable trend for the future. Two key phase-change heat transfer mechanisms govern the operation of two-phase immersion cooling systems: boiling and condensation. In this project, students will be trained on two key topics: 1) Boiling heat transfer in two-phase immersion cooling systems using computational fluid dynamics (CFD) software. 2) Condensation heat transfer in two-phase immersion cooling systems using computational fluid dynamics (CFD) software.
Mentor in CCU	Asst. Prof. Yu-Chen Lin Department of Mechanical Engineering, National Chung Cheng University, Taiwan (E-Mail: imeyclin@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 May 4 and December 31 , 2026

Project Number	P14
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	P15
Project Title	Smart Sensing Technology for Smart Manufacturing
Description of the Research	Welcome to the AISC Lab at CCU, where our research focuses on advancing smart manufacturing technology by utilizing sensor signals and integrating machine learning methods. Our lab combines physical kinematic research with cutting-edge algorithm development to drive innovation in the manufacturing sector. We are particularly focused on two key areas: 1. The Development of Smart Tool Holders: Our lab has developed smart tool holders designed to monitor and sense cutting dynamics accurately. This allows us to gain deeper insights into the machining process, improving precision and enhancing overall production quality. 2. Signal Processing and Smart Manufacturing: With the rise of Artificial Intelligence (AI) in manufacturing, we see a unique opportunity to integrate AI into smart manufacturing processes. However, the success of AI relies heavily on the accuracy of sensor signals, which are critical for creating reliable models. Our research aims to bridge this gap by combining signal processing techniques with AI to optimize and enhance modern manufacturing systems. We welcome students who are passionate about these topics and eager to contribute to the future of smart manufacturing technology.
Mentor in CCU	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 2 and December 31, 2026

Project Number	P16
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	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 2 and December 31, 2026

Project Number	P17
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. For further information, please visit our lab's website at https://sites.google.com/view/ccuantlab/english.
Mentor in CCU	Assoc. 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 2 and December 31, 2026

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