Introduction to Master/Doctoral Programs

College of Engineering
CCU, Taiwan

CSIE

Department

Computer Science and Information Engineering

CSIE

Initiated M.S. program in 1989

Launched undergraduate program in 1992

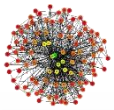
Launched Ph.D. program in 1993

Faculty and Students

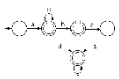
- 26 faculty members
- 801 students(9 international students)
- 23 doctorate students(6 international students)
- 367 master students(2 international students)
- 411 undergraduate students(1 international students)

CSIE Research Groups (#Profs.)

System-on-Chip and Embedded Systems(5)

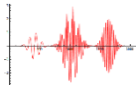


Networks & E-learning(8)



Computation Theory(2)

Systems and Software(5)



Multimedia Signal Processing and AI(6)

Awards and Honors

- Prof. Ching-Che Chung, Excellence in Teaching Award, National Chung Cheng University , 2022.
- Prof. Jian-Jhih Kuo, Outstanding Young Research Award, 2021
- Prof. Ching-Che Chung, IEET Excellence in Teaching Award, 2021
- Prof. Ching-Che Chung, ViewSonic Innovative Teacher Award – Blending Learning- Merit Award, 2021
- Annually, 10 to 15 competition awards earned by student teams led by CSIE professors
- Annually, 2 to 3 best paper awards given to CSIE professors

Funding

Administration budget:
$143K USD/year

- Personnel: $28K USD
- Books/Equipment: $22K USD
- Others: $93K USD

Research funding:
$1.5 million USD/year

- National Science and Technology Council(NSTC)
- Ministry of Education (MOE)
- Research Institutes
- Industry

International Collaborations

~10 international scholars visit per year

- Prof. Pao-Ann Hsiung, Taiwan-India Joint Seminar on Artificial Intelligence and Hydraulic Engineering, India
- Prof. Pao-Ann Hsiung, Bengaluru Tech Summit 2020, India
- Prof. Ren-Hung Hwang, Video streaming based on Multicast and Mobile Edge Computing technologies ,University of Washington, USA
- Prof. Wei-Min Liu, Affordable Modular Railroad Smart Sensing System 4.0, Czech Republic
- Prof. Yao-Ting Huang, ANR-MOST Blanc Program (Candidate Genes & Pathways related to Autoimmune …), France
- Prof. Wei-Min Liu, National Inst. of Biomedical Imaging & Bioengineering, National Institutes of Health, USA

International Master Program

- Years of study: 1~4 years
  - Usually 2 years
- Course requirement
  - 24 credits
- Master thesis is required
- “Research Ethics Education” is required
- Currently, 1 students from India, 1 from Nepal

International Ph.D. Program

- Year of study: 2~7 years
- Course requirement
  - 18 or 30 credits of major studies
    - With MS: 18 credits
    - Without MS: 30 credits
- Ph.D. dissertation is required
  - Journal paper publication is also required
  - Academia-Industry Projects, Patents, Technology Transfer (optional, but can count)

Ph.D. Scholarship

- One fresh International Ph.D. student can get a scholarship per year.
- Maximum: USD 4,400 for one year only.
- Normally, it is around USD 3,600.
- This is in addition to the project research assistant funding, university waiver of tuition fees, etc.

- Example
  - Mr. Nguyen, Van Linh(now he is our assistant professor) from Vietnam enrolled to our Ph.D. program in Fall 2016
    - Receive CCU scholarship: NT$ 53,002 /year
    - Receive CSIE department’ s scholarship: NT $75,000 /year
    - Receive MOE project assistantship: NT$ 144,000 /year
    - Total amount of scholarship/assistantship received for the 2016 academic year is NT$ 272,002 (~US$ 9,000)
    - In addition to tuition waiver and free dormitory accommodation

CSIE

經濟日報

首頁 即時 會員專區 要聞 產業 國際 兩岸 金融 證券 行情 期貨

11月外銷訂單577.8億美元 連九紅 16:06

美商對半導體及下游產品提33

濟日報 / 產業 / 產學研訓

相關新聞

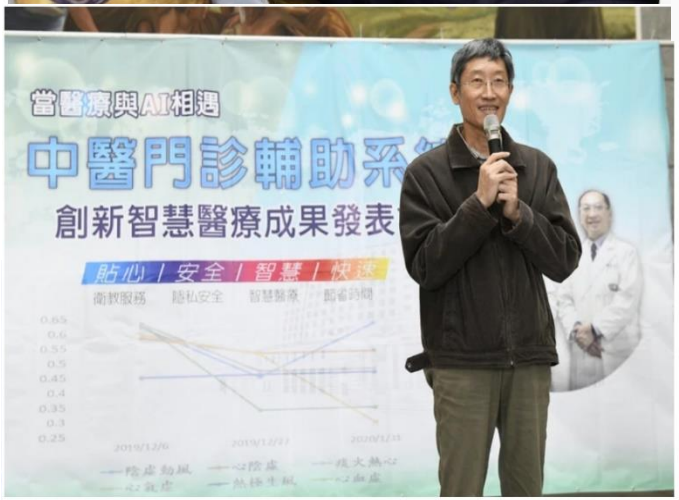
聚焦AI、水利 臺印攜手開啟跨境、跨域、跨界新契機

分享 分享 留言 列印 收藏 A- A+

2020-12-17 19:44 經濟日報 楊鎮州 讚 95 分享

LINE結合AI 大林慈濟醫院攜手中正大學助病患雲端看中醫

更新時間： 2020/12/10 18:58



中正大學資工研究所教授林迺衛指，此技術摸索了10多年後才成功。大林慈濟醫院提供

聯合報 即時 要聞 娛樂 運動 全球 社會 產經 股市 房市 健康 生活 文教 評論 地方 兩岸 數位

減少人工辨識問題 大林慈濟、中正大學推口罩辨識系統

2020-08-18 16:56 聯合報 / 記者陳玫伶／嘉義縣即時報導

+ 口罩

嘉義縣大林慈濟醫院日前與國立中正大學合作，以AI影像辨識技術推出口罩辨識系統。圖／大林慈濟醫院提供

林慈濟醫院表示，正確佩戴口罩可有效降低肺炎傳染率，因此向中正大學資訊工程管系詢問，是否可開發出辨識來院民眾正確配戴口罩的需求，一個月時間就研發成功。

林慈濟醫院智慧醫療創新中心主任林庭光表示，目前與中正大學資工系密切合作，陸續會持續研發智慧機器人進駐隔離病房，協助隔離病房送餐、輸送物品、樓層服務，降低醫護人員近距離接觸的風險。

EE

CommE

Department

Electrical Engineering
&
Communications Engineering

EE
CommE

	Electrical Engineering (EE)	Communications Engineering (CommEng)
Programs and Establishment	• MS program: 1990 • BS program: 1992 • PhD program: 1993	➢MS program: 1999 ➢BS program: 2003 ➢PhD program: 2006
Feature	• The best EE department in central Taiwan • First-tier and research-oriented EE department	The only department in central and southern Taiwan that offers MS and PhD programs.
Professors	• 20 faculty members • All with Ph.D. degrees • Each professor conducts his/her own laboratory	➢12 faculty members ➢All with Ph.D. degrees ➢Each professor conducts his/her own laboratory
Students	• Undergraduate: 333 • Master level : 339 • Doctoral level : 23 • 12 foreign students for Master/PhD study	➢Undergraduate: 141 ➢Master student: 137 ➢Doctoral student: 4 ➢5 foreign students for Master/PhD study

EE ComE

Research Groups

Electrical Engineering

- Electromagnetic Techniques and Integrated Systems
- Signal and Intelligent Computation
- Electrical Power, Renewable Energy, and Power Electronics
- Computer Engineering
- System on Chips

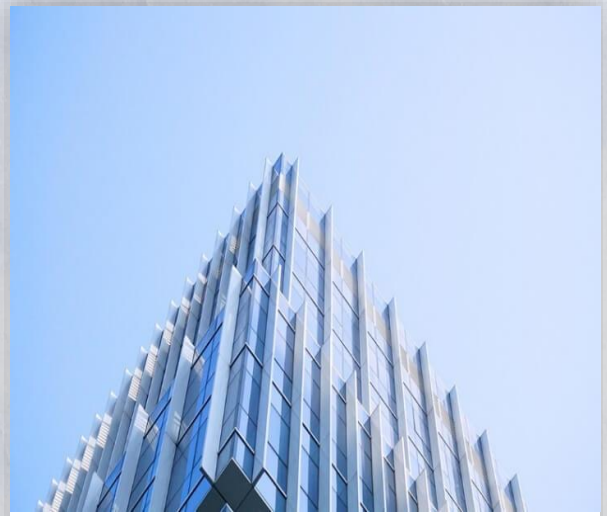
Communication Engineering

- Communication Networking
- Communications Systems

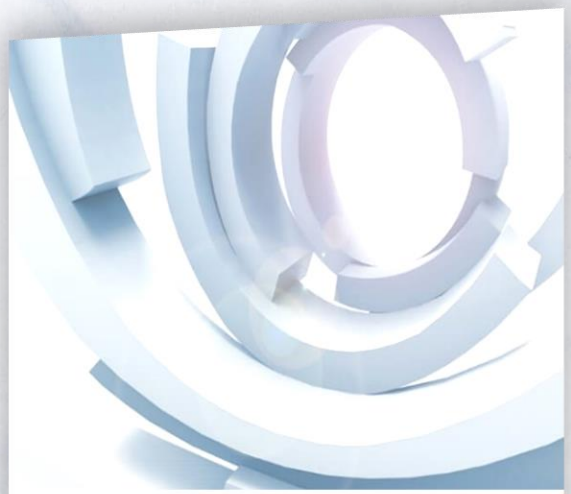
EE
CommE

EE + CommEng

EE and CommEng departments are closely integrated



Resources and achievements are shared



The following descriptions are applied to both EE and CommEng

EE CommE

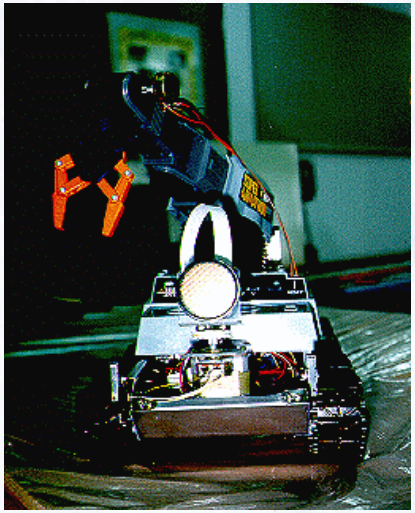
Research direction 1: Intelligent Life

Mobile Applications

Cloud Computing

Big data analysis

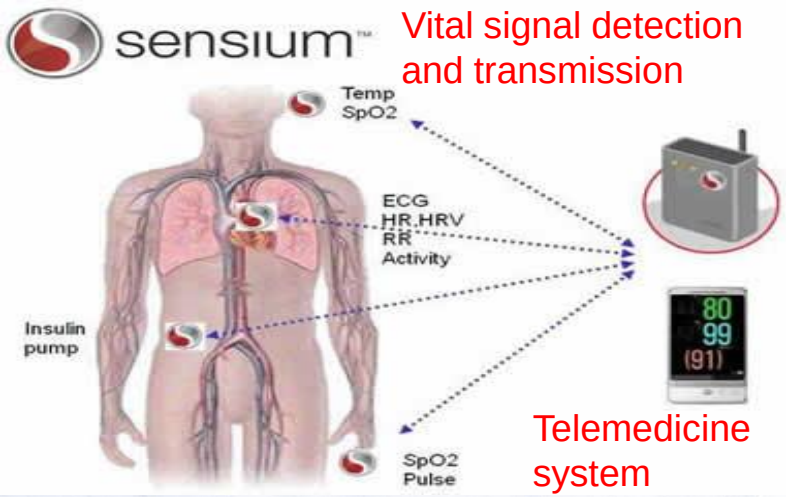
Soccer Robots



Smart Robots

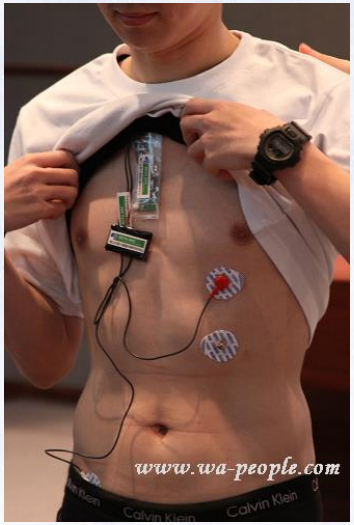
Internet of Things

Research direction 2: Health Care



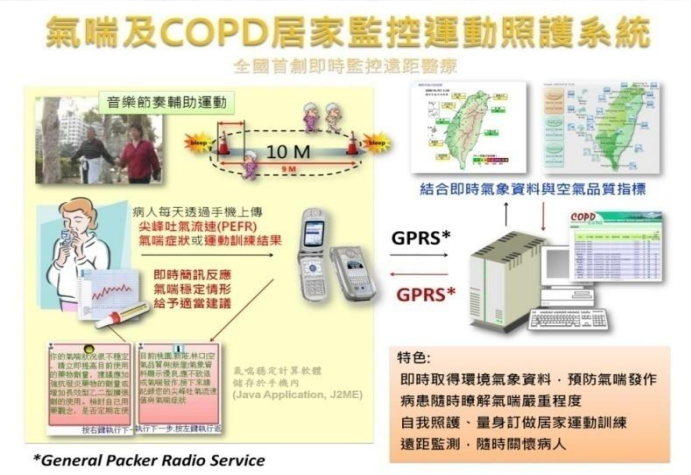
Vital signal detection and transmission

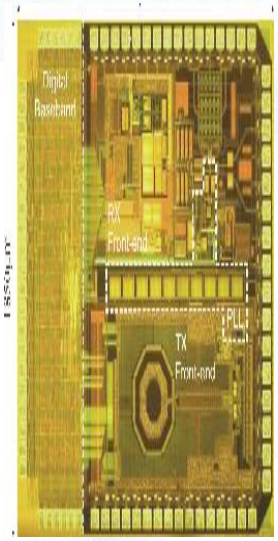
Telemedicine system



Vital signal detection and transmission

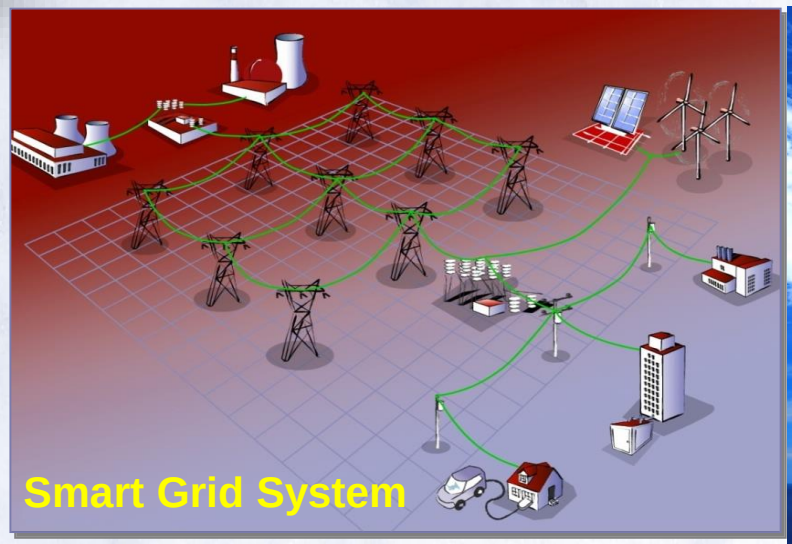
Home health monitoring system



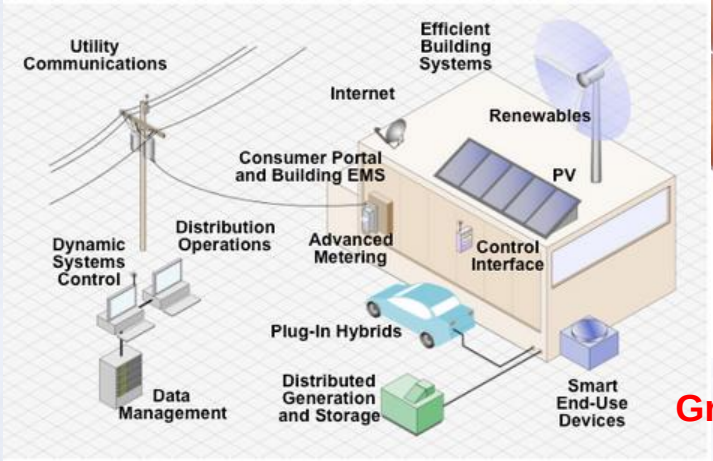


EE CommE

Research direction 3: Smart Green Power



Hybrid energy system



Green: environment protection

Motor control

EE CommE

Group 1: Computer Engineering

- Focus on software engineering and computational system
  - ✓ Robot design and intelligent control (e.g., vision)
  - ✓ Embedded systems and FPGA chip implementations
  - ✓ Human-robot interaction
  - ✓ Vision-based surveillance systems
  - ✓ SLAM system
  - ✓ Intelligent agents

Humanoid robot

Soccer Robot
Team cooperation

EE CommE

Group 2: Electrical Power, Renewable Energy, and Power Electronics

- Focus on power management, power electronics, and diverse kinds of renewable energy
  - ✓ Smart grids, micro-grid, energy economics, and power quality
  - ✓ Control system, motor drives, and mechatronics integration
  - ✓ Solar power, wind power, and tide power

Solar Board

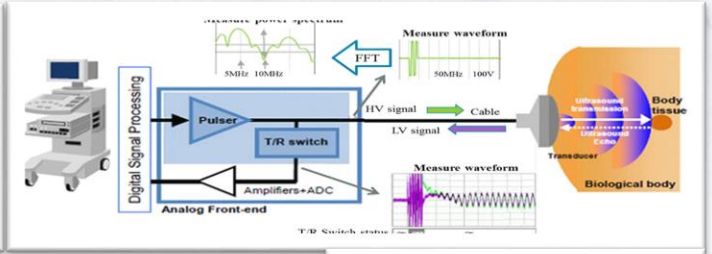

AC/DC Converter

Solar/Wind power Converter

Group 3: Signal and Intelligent Computation

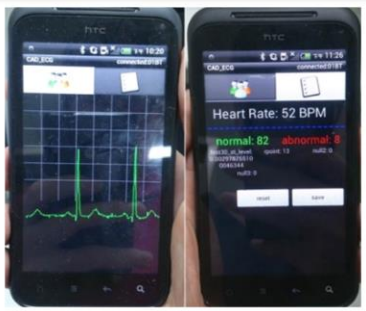
- 2D/3D audio/image/video processing
  - ✓ DVB, 3DTV, video compression/transmission, smart home, big data analysis
  - ✓ Audio/video recognition, **Deep learning**, video surveillance
- Biomedical signal processing
  - ✓ ECG, EEG, Endoscopic video, brain signal analysis, emotion recognition

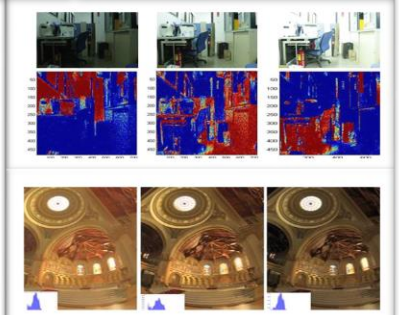
3D view from stereo Video

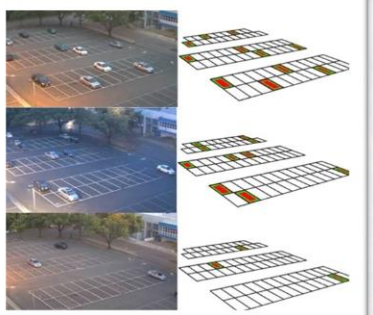


Ultra-sound signal

Bio-APP



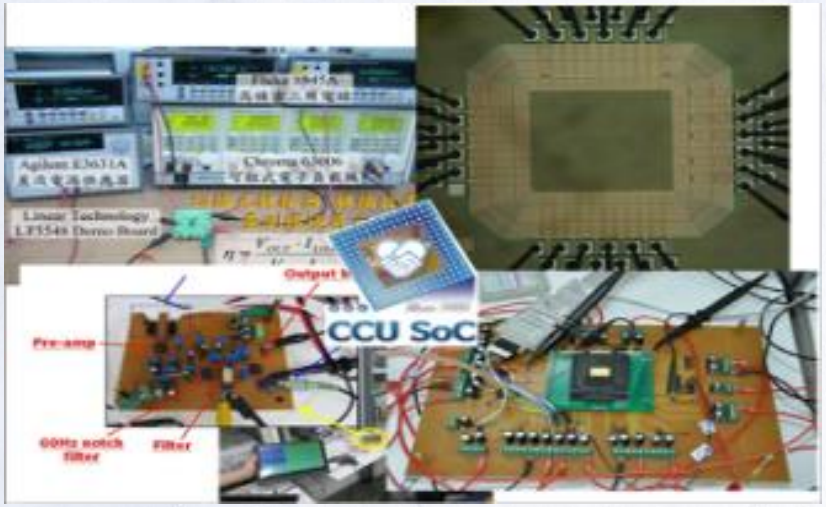




Parking lot management

Group 4: System on Chips

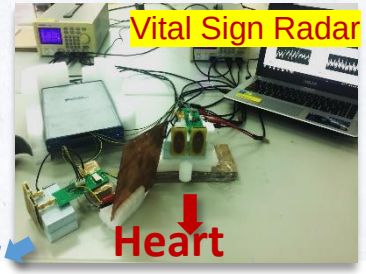
- Focus on low power/low voltage SoC design, EDA, and applications
  - ✓ Chip: Sensor interface, analog front-end circuit, transducer, data converter, DC-DC converter, Bio chip
  - ✓ EDA: Circuit optimization, 3D IC, analog layout synthesis
  - ✓ Application: HDR synthesis, intelligent vision system

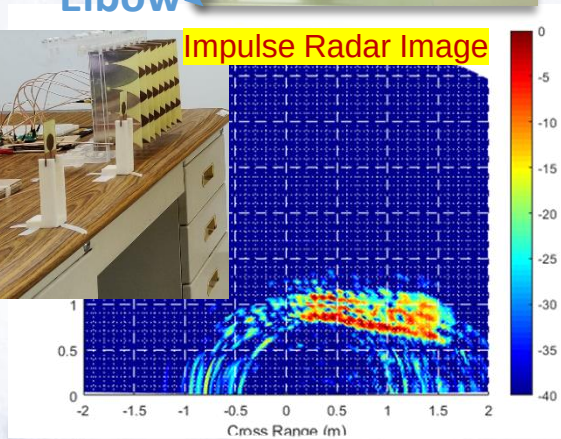


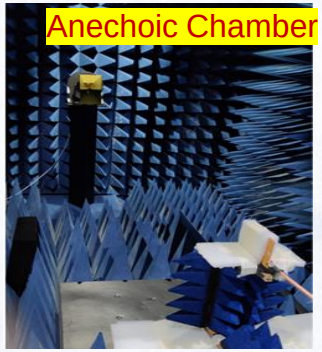
HDR Synthesis

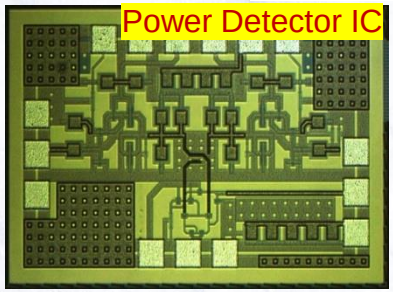
Group 5: Electromagnetic Techniques and Integrated Systems

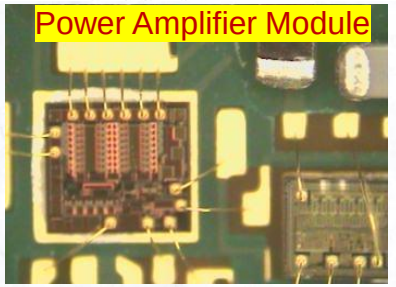
- Focus on RF circuit design and applications
  - ✓ Microwave, and millimeter-wave circuit
  - ✓ Bio-medical electromagnetic detection
  - ✓ Radar-based application
  - ✓ Antenna array and beamforming
  - ✓ Wireless positioning systems
  - ✓ Microwave transistor modeling
  - ✓ MLCC, LTCC, SAW, and micro-strip bandpass filter design
  - ✓ Tunable active bandpass filter design, frequency divider







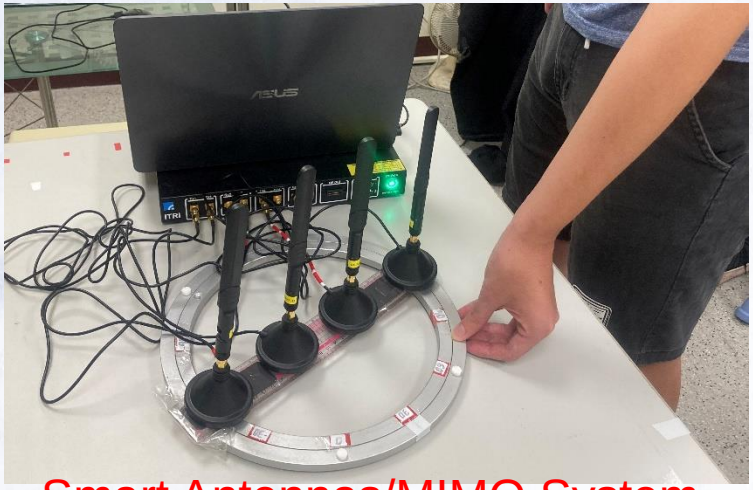




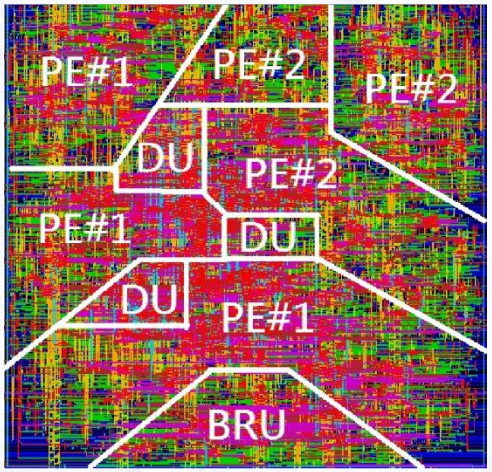
EE CommE

Group 6: Communications Systems

- ✓ Personal and mobile communications systems
- ✓ Coding and communications theory
- ✓ Wireless resource management
- ✓ Multiple-input-multiple-output (MIMO) communications
- ✓ **B5G** wireless communications systems



Smart Antennas/MIMO System



Communication Chip Layout

EE CommE

Group 7: Communications networking

- Focus on internet, optical, and sensor networks
  - ✓High-speed network
  - ✓Network programming and management
  - ✓Wireless sensor network
  - ✓Optical communications systems
  - ✓Real-time embedded systems
  - ✓Cloud computing
  - ✓Communication protocols
  - ✓Network security
  - ✓Broadband network

EE
CommE

English-Taught Courses

Area	Courses
Computer Engineering	**8**
Signal Processing & multimedia Communication	**9**
Systems on Chip	**6**
Power Electronics and Power Systems	**6**
Electromagnetic Integrated Circuits	**9**
Communications systems	**7**
Communication Networking	**6**
Total	**51**

- 15~20 courses @ semester, Top1 EE/CommEng department in central and southern Taiwan
- 100% English, no Chinese
- Each international student can take 2~3 courses of his own research group

EE CommE

Awards & Honors (students)

The CCU EE student teams won gold, silver, and copper awards in 2017 IEEE International Microwave Symposium. This is the ten consecutive year since 2008 that the EE students have won the student design competition.

Awards & Honors (students)

- The 1st prize in the IC design competition (2016 CAD Contest) in IEEE/ACM International Conference on Computer-Aided Design

EE CommE

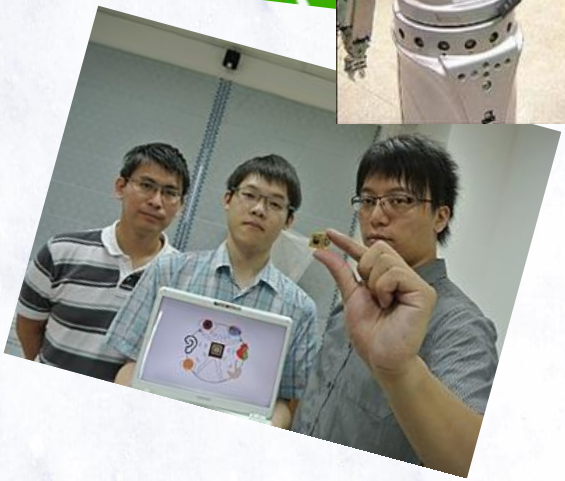
Awards & Honors

Outstanding research works in IEEE ISSCC (12 Papers in 5 years)

Best paper awards (IEEE ISIC) and (IEEE ISBB)

The Champion of RoboCup Japan

IEEE Fellow



Golden Silicon Awards

EE CommE

Academic Achievements

- Publications in 5 years: 263 SCI papers
- Journal Editorships (Editor-in-Chief, Associate Editor)
  - International Journal on Artificial Intelligence Tools
  - IEEE Journal of Electromagnetic, RF, and Microwave in Medicine and Biology
  - IEEE Trans. on Microwave Theory and Techniques
  - IEEE Trans. on Instrumentation and Measurement
  - IEEE Trans. on Power Delivery
  - IEEE Power Engineering Letters
  - International Journal of Electrical Engineering
  - IEEE Trans. on Industry Applications
  - IEEE Sensors Journal

EE CommE

Granted Funding

- Annual research funding ranges from USD 2~3M
- Research funding from:

Government

- Ministry of Science and Technology (MOST)
- National Science and Technology Program (NSTP)
- Technology Program from Ministry of Economic Affairs(MOEA)

Industry

- (ASUS, Acer, Delta, Hon-Hai, MediaTek, etc.)

EE CommE

On-going main projects

- Research on 5th Generation Mobile Cellular Networks with Large-Scale Active Antenna System (MOST & ASUS)
- Network Technology in Cloud Data Center (MOST)
- Applying Sensor Network in Intelligent Sensing System for Manufacturing (MOE)
- Wireless Navigation System for Minimally Invasive Spinal Surgery (Metal Industries Research and Development Centre)
- RF-front-End System Design for 5G Communication
- Milli-meter-wave beam forming system for wireless broadband communications (Taiwan-Canada bi-lateral joint project)
- Smart Grid and Renewable Energy (MOST)

International Students

Totally 21 students from diverse countries

Orientation for new students

Lunch for celebrating Lunar new year

ME

Department

Mechanical Engineering

ME

Background & Statistics

The ME Department was founded in 1991

- MS program: 1991, No. of faculty members: 5
- BS program: 1993, No. of faculty members: 10
- PhD program: 1996, No. of faculty members: 15

- Two undergraduate classes:
  1998, No. of faculty members: 18
- Integrated with OME:
  2019 , No. of faculty members: 24
- Current faculty member: 27

ME

IEET Accreditation

Institute of Engineering Education Taiwan
Accreditation Council

Accreditation Certificate
No. *2017Y077*

Hereby it is certified that upon decision of the Accreditation Council and based on the Engineering Accreditation Criteria 2016

National Chung Cheng University
Department of Mechanical Engineering

Bachelor of Science
First Accredited Academic Year: 2005
Current Accreditation Cycle: from August 1, 2017 to July 31, 2023
Accredited Status
from August 1, 2017 to July 31, 2023

Master of Science/Doctor of Philosophy
First Accredited Academic Year: 2007
Current Accreditation Cycle: from August 1, 2017 to July 31, 2023
Accredited Status
from August 1, 2017 to July 31, 2023

Chairman

May 2018

Program (CCUME)	Accredited Academic Year by IEET
Bachelor's Program	2017~ 2023
Master's Program Ph.D. Program	2017~2023

★IEET accreditation is a period review process with a six-year cycle.

Institute of Engineering Education Taiwan (IEET)
Is a member of International Agreements:
The Washington Accord
Seoul Accord
Sydney Accord
Canberra Accord

ME

Research Application Domain 1

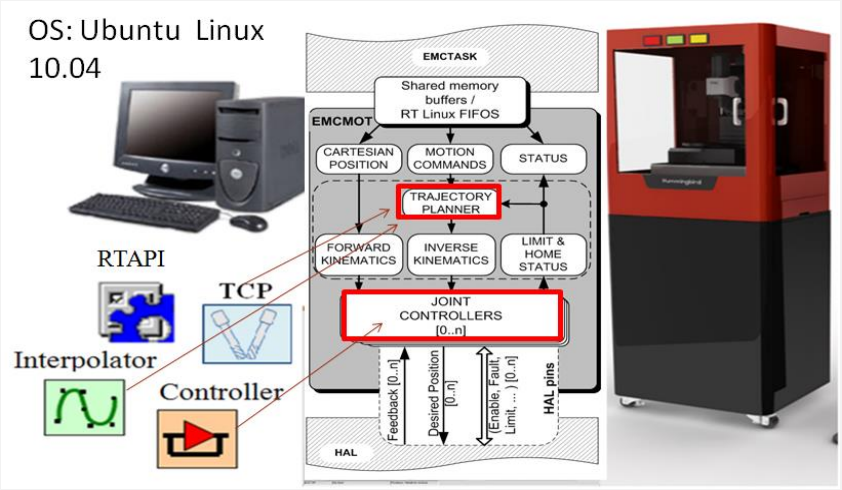
Precision Machinery and Machine Tools

As the campus of CCU is closed to the Precision Machinery Corridor and the Science Park in central Taiwan , the Department enjoys the collaborative resources of the industry and has gained recognition and reputation in research.

- Smart Feed Drive System
- High Speed Spindle Technology
- Intelligent PC Based Controller
- Mechatronics and Control Technology
- Prognosis for fatigue and life estimation
- Chatter Detected System

Advanced Machine Tool Center

AMTC- Develops its own PC Linux based controller to achieve the goal of intelligent manufacturing.



ME

Research Application Domain 2

Opto-Mechatronics

Design for OIS VCM

Requirement:

- Resistance of Coil: 15±3Ω
- Rated Stroke: +200μm/-80μm
- Moving Tilt: ≦10 ´
- Posture Difference of Stroke: ≦60μm
- Hysteresis: ≦60μm

BOM

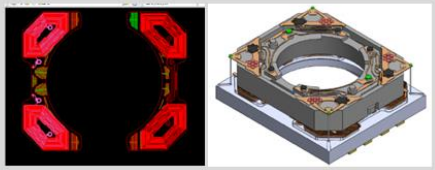
OIS VCM Design

CAE Analysis

Components

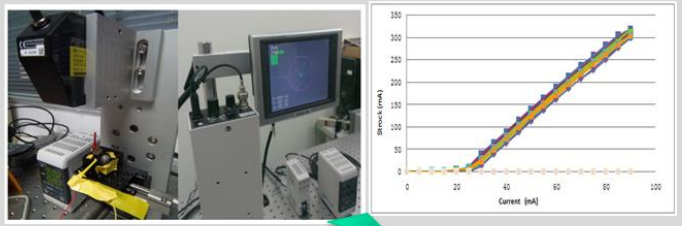
Test

Pro-E/AutoCAD

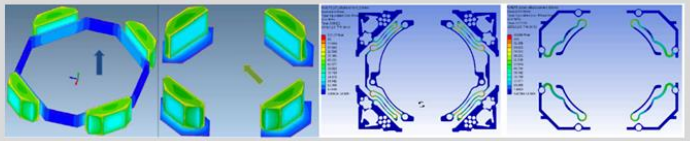


Components

Test Validation



Infolytica Magnet Analysis

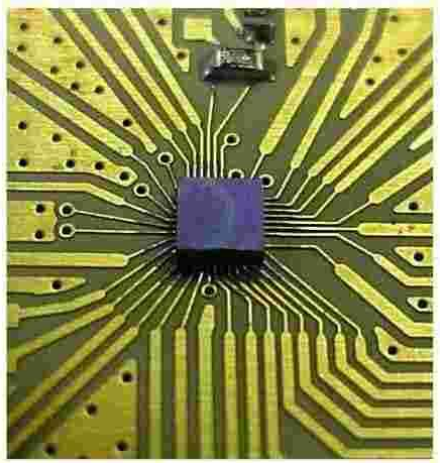


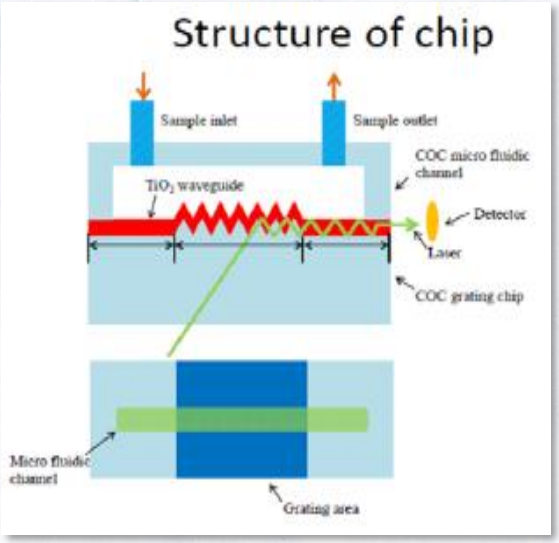
ME

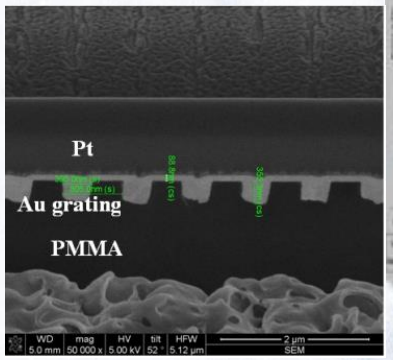
Research Application Domain 3

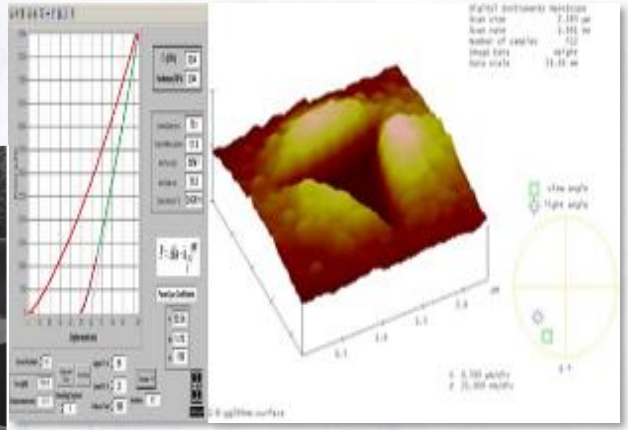
Nanotechnology and MEMS

- Tribology
- Nanomechanics
- Nanotechnology
- Surface Texture
- Electrical Packaging
- Semiconductor Fabrication
- Fabrication of the Piezoelectric Thin Film
- Printing-Based Fabrication of Flexible Electronics
- Nanoimprint







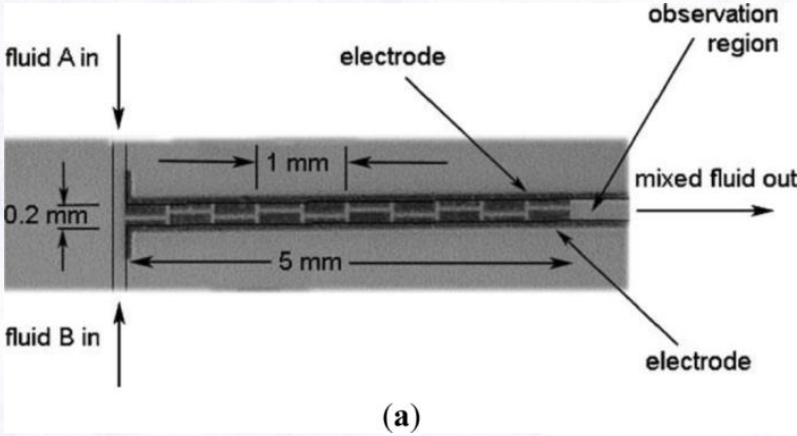


ME

Research Application Domain 4

Biotechnology/Biomedical Engineering

- AC Electro-Osmosis in the biochip
- Label-Free biosensors
- Investigation of cryopreservation of articular cartilage chondrocytes
- Lab-on-a-chip/cell chips
- Microfluidics
- Nanoimprinting
- Nano-biomedical applications
- MEMS actuators and sensors
- Plasma processing

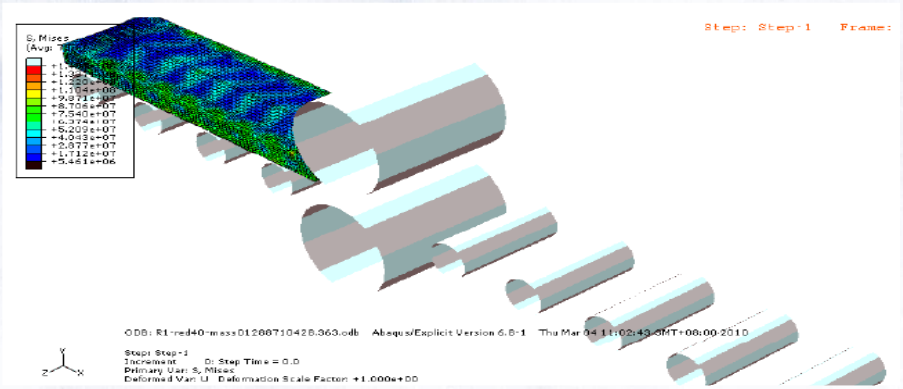


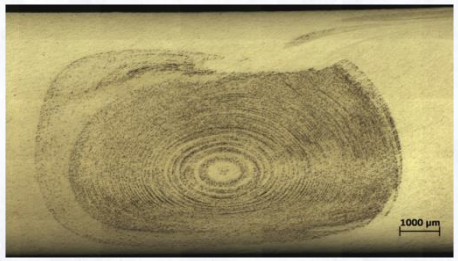
ME

Research Application Domain 5

Energy Technology

- Proton Exchange Membrane Fuel Cells
- Energy and Pyrolysis
- Kinematics, Robotics
- Friction Stir Welding
- Magnetic Flexible Rotor Bearing System
- Human Position Analysis
- Image Processing and 3D Reconstruction
- Steel Rolling and Metal Forming
- Solar Concentrating Power System





ME

Scholarships and Financial Aid(1/3)

Master: > 4,000 NTD
Ph. D.: > 10,000 NTD

NO.	Professor	Research Topics	Quota	TA or RA	Possible Funding	Remarks
1	Chen, Shyh-Leh	Active magnetic bearing	1 MS or PhD student	RA	NT6000-10000	
		Motion control	1 MS or PhD student	RA	NT6000-10000	
2	Cheng, Chih-Chun	Vibration analysis, Dynamic modeling and Structure optimizations of Machine tools	1 MS student	RA	NT6000	Funding based on performance
		Vibration analysis, Dynamic modeling and Structure optimizations of Machine tools	1 PhD student	RA	NT8000-10000	Funding based on performance
3	Hsieh, Wen-Hsin	Heat transfer and thermal errors in machine tools	1 MS or PhD student	RA	NT 4000-8000 for MS, NT8000 to 10000 for PhD	Funding is negotiable depending on performance
		Nano optical biosensors	1 MS or PhD student	RA	NT 4000-8000 for MS, NT8000 to 10000 for PhD	Funding is negotiable depending on performance
4	Jen, Chun-Ping	Impedance measurement for Biochip	2 PhD students	RA	NT10000	
5	Yao, Hong-Tzong	Customized CAD/CAM, Digital Dentistry, Additive Manufacturing	1 MS or PhD student	RA	NT6000-20000	
6	Chen, Yong-Song	Fuel cells for unmanned vehicles, development of membrane electrode assembiles	1 MS or PhD student	RA	NT6000-10000	
		Flow batteries for energy storage, optimization of operating condition	1 MS or PhD student	RA	NT6000-10000	

ME

Scholarships and Financial Aid(2/3)

Master: > 4,000 NTD
Ph. D.: > 10,000 NTD

7	Lin, Pai-Chen	Study of laser welding & ultrasonic welding technology	1 MS student	RA	NT6000-8000	
8	Chang, Guo-En	1. Optical biosensors; 2. Semiconductor photonic devices	2	TA and RA	MS: RA (NT. 8000/per month) + TA; PHD: RA (NT 10000/month or more depending on performance) +TA	
9	Ye Zhi Ting	Micro LEDs display	1 MS or PhD student	RA		
10	Kun-Mo Lin	Plasma Reactor Design and Characterization	1 MS or PhD student	RA	NT6000 for MS NT10000 for PhD	
11	Lin, Rong-Shine	Development on CAD/CAM software for 3D printing	1 MS or PhD student	RA	NT6000-10000	
		Collision Detections for Robot Arm and Machine	1 MS or PhD student	RA	NT6000-10000	
		Trajectory Accuracy Introvement for Five-Axis Machining	1 MS or PhD student	RA	NT6000-10000	
12	Lin, Yu-Chen	Microfluidic boiling flow	1 MS student	RA		
13	Kao, Yung-Chou	VR/AR/MR, Machine Tool Emulation, Smart Manufacturing,	1 MS or PhD student	RA	NT 6000 for MS, NT 10000 for PhD	

Scholarships and Financial Aid(3/3)

Master: > 4,000 NTD
Ph. D.: > 10,000 NTD

- RA scholarships: 21 international MS & PhD students
  - Structural Mechanics & Advanced Materials Group: 5
  - Manufacturing & Design Group: 4
  - Thermo-Fluid Mechanics Group: 8
  - Automation & Control Group: 3
  - Opto-Mechatronics: 1

ChE

Department

Chemical Engineering

ChE

History

- Founded in 1993, enrolled only master's degree students at that time.

- Undergraduate program was added in 1997.
- Doctorate program was initiated in 1998.

- Currently 15 faculty members
  (including 11 professors, 2 associate professors and 1 assistant professor, 1 lecturer)
  186 undergraduate, 107 master's and 9 doctorate students .

ChE Areas of Research Interest

- **Biotechnology and Biomaterials:**
  Prof. Ching-Yi Chen; Kuang-Tse Huang; Yung-Chih Kuo; Wen-Chien Lee; Feng-Sheng Wang

- **Nano- and Inorganic Materials:**
  Prof. Jan-Ray Chang; Chien-Chong Chen; Yuan-Yao Lee; Chao-Hong Wang; Yu-Chun Fu

- **Polymer technologies and applications:**
  Prof. Ching-Yi Chen; Prof. Chi-Chung Hua; Jing-Cherng Tsai; Raymond Chien-Chao Tsiang

- **Chemical process, simulation and catalysis technology:**
  Prof. Jan-Ray Chang; Chi-Chung Hua; Yung-Chih Kuo; Tsao-Jen Lin; Jing-Cherng Tsai; Feng-Sheng Wang

Achievements and Services

The current editorial members of science or engineering journals

- Distinguished Prof. Yung-Chih Kuo: Associate Editor of the Journal of Taiwan Institute of Chemical Engineers
- Distinguished Prof. Yuan-Yao Lee: Associate Editor of the Journal of Taiwan Institute of Chemical Engineers
- Prof. Jing-Cherng Tsai: Associate Editor of the Journal of Polymer Research
- Distinguished Prof. Wen-Chien Lee: Editorial Board, Enzyme and Microbial Technology
- Distinguished Prof. Wen-Chien Lee: President of Biotechnology and Biochemical Engineering Society of Taiwan
- Distinguished Prof. Wen-Chien Lee: President of Asian Federation of Biotechnology

ChE

Award and Competition

- Professor Jing Cherng Tsai: Outstanding Polymer Technology Application Award of the Chinese Polymer Society, 2015
- Distinguished Professor Yung-Chih Kuo: Outstanding Academic Research Award of the Chemical Engineering Society of Taiwan.
- Distinguished Professor Yuan-Yao Lee : Outstanding Research Award of CCU, 2015
- Professor Chao-Hong Wang: Young Researcher Award of CCU, 2015
- Professor Jing Cherng Tsai: FengXinde Prize at 14th International Symposium on Polymer and Condensed Matter Physics in China, 2017
- Professor Jing Cherng Tsai: Outstanding Chemical Engineering Article of the Year at the 2017 Taiwan Institute of Chemical Engineers, 2017
- Distinguished Professor Yung-Chih Kuo: Shi Yanping Paper Award at the 2017 Taiwan Institute of Chemical Engineers, 2017
- Distinguished Professor Wen-Chien Lee: Research Exchange Award, KSBB Korea, 2017
- Distinguished Professor Feng-Sheng Wang and Yung-Chih Kuo: World’ s Top 2% Scientists 2020
- Distinguished Professor Wen-Chien Lee: ,BEST Life Achievement Award, Biotechnology and Biochemical Engineering Society of Taiwan, 2022

ChE

Conference organizing

- 2012- Annual Chinese Polymer Society Conference
- 2013- International Symposium on Nanotechnology and Biopolymers
- 2014- 20th Symposium Series of Young Asian Biochemical Engineers' Community (YABEC 2014)
- 2018-Taiwan-Japan Bilateral Polymer Symposium
- 2018-2nd International Conference on Applied Microbiology(ICAM)

ChE

International Research Project and Collaboration

- Taiwan/Ceskoslovensko Collaboration project (2014-2017): Precision polymer and copolymer syntheses through living polymerization.

- Taiwan/Czech Joint Research Project (2012-2013) on "Innovative multifunctional magnetic nano- and microparticles for cell diagnostics"

- Taiwan-Czech Joint Research Project (2016-2018) on "Antioxidative magnetic nanoparticles based on natural antioxidants: Nanoparticle-cell interactions"

ChE

Publications

2018

24 SCI publications

2019

29 SCI publications

From 13 faculty members

2020

35 SCI publications

2021

32 SCI publications

Industry Collaborations

Collaborative industrial projects and governmental projects

- 賀利氏

- during 2018-2021 Total research grants $3.34 M USD

International Collaborations

ChE

Prof. Wen-Chien Lee, organized

(1) Mahidol University -National Chung Cheng University Joint Symposium on Biomedical Sciences and Beyond (Bangkok, July 2017),
(2) Assumption University- National Chung Cheng University Joint Symposium and Workshop on Bioscience and Biotechnology for Promoting Health and Beauty (Bangkok, July 2017), and
(3) 1st Joint Seminar between Prince of Songkla University and National Chung Cheng University (Hatyai, November 2017)

Prof. Raymond Chien-Chao Tsiang and Prof. Jen-Ray Chang, Taiwan-Slovak Joint Research Cooperation, 2016-2017.

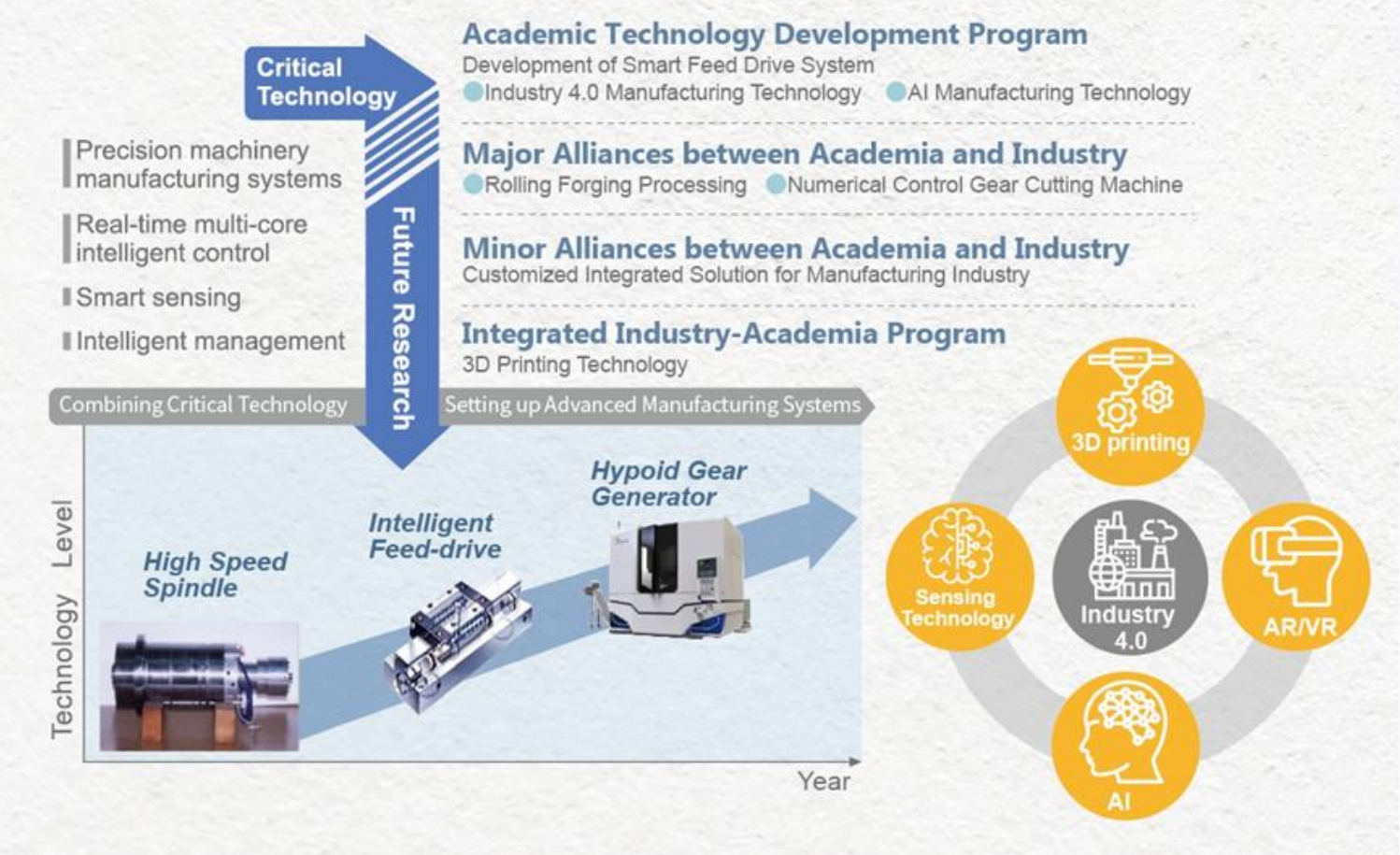
AIM-HI

Master & Ph.D. Program

in Advanced Manufacturing Systems

AIM-HI

Manufacturing is the future



- 4th industry revolution (industry 4.0) is happening
- Demand for high-level talent and engineers
- Strong connections with industries and universities

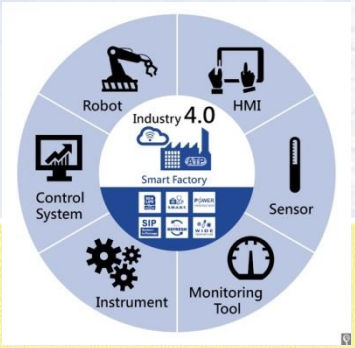
AIM-HI

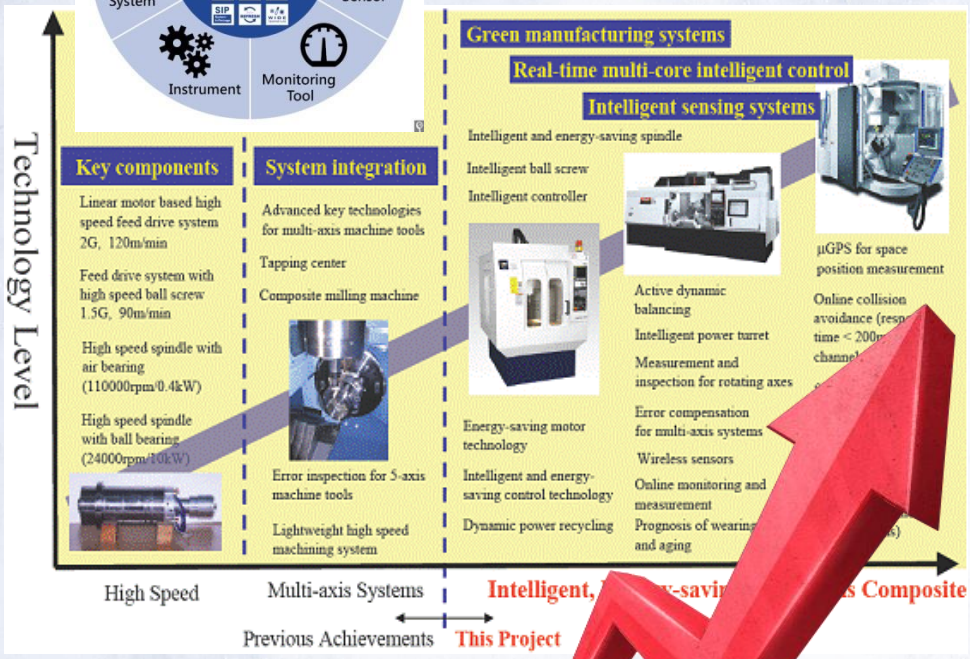
Manufacturing is the future

Science Park and Precision Machinery Cluster, Central Taiwan

- Ershui Industrial Park, Changhwa
- Yunlin Technology-based Industrial Park
- Science Park and Precision Machinery Cluster, Huwei Park
- Minsyong Industrial Park
- Sinying Industrial Park

Science Park and Precision MachineryCluster, Southern Taiwan





HIWIN®
Motion Control and System Technology

FEMCL

Tongtai

UBC

Georgia Tech

RWTH AACHEN UNIVERSITY

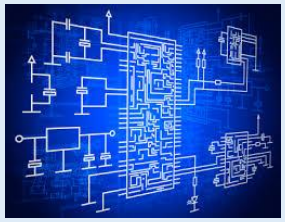
ADVANTECH LNC
研華寶元數控

AIM-HI

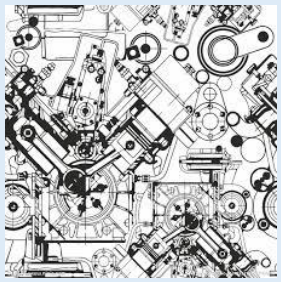
Master of Science in Advanced Manufacturing Systems

Multidisciplinary Research Program

Dept. of Computer Science and Information Engineering

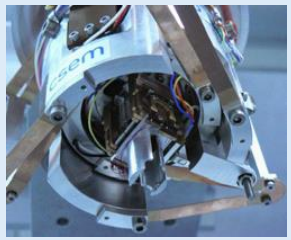


Dept. of Electrical Engineering

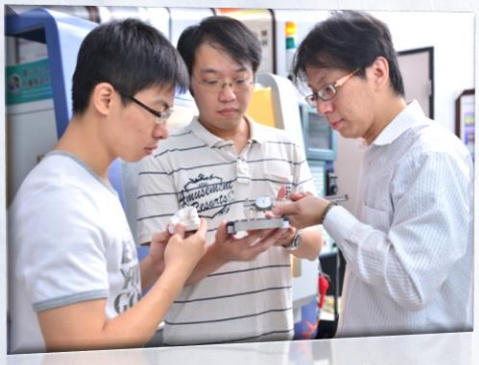


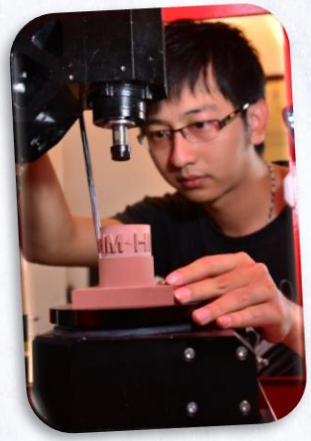
Dept. of Mechanical Engineering

Dept. of Communications Engineering



Graduate Institute of Opto-Mechatronics





AIM-HI

Master of Science in Advanced Manufacturing Systems

Featured Laboratories

Featured Laboratories

- Advanced Intelligent Manufacturing Cell
- Digital Dentistry Demonstration Laboratory
- Precision Machine Tool Laboratory
- Innovation Multipurpose Laboratory
- Gear Intelligent Manufacturing Laboratory
- Thermal Error Laboratory
- Prototyping Laboratory
- Micro/Nano Fabrication Laboratory

Ph. D. Program in Advanced Manufacturing Systems

Four-year Ph.D. program

- Y1-Y2: Take courses in university
- Y3-Y4: Do research and develop technologies in a cooperative company

* Need a cooperative company

* Master students can directly enter the program

- Opportunity to join the cooperative company after graduation

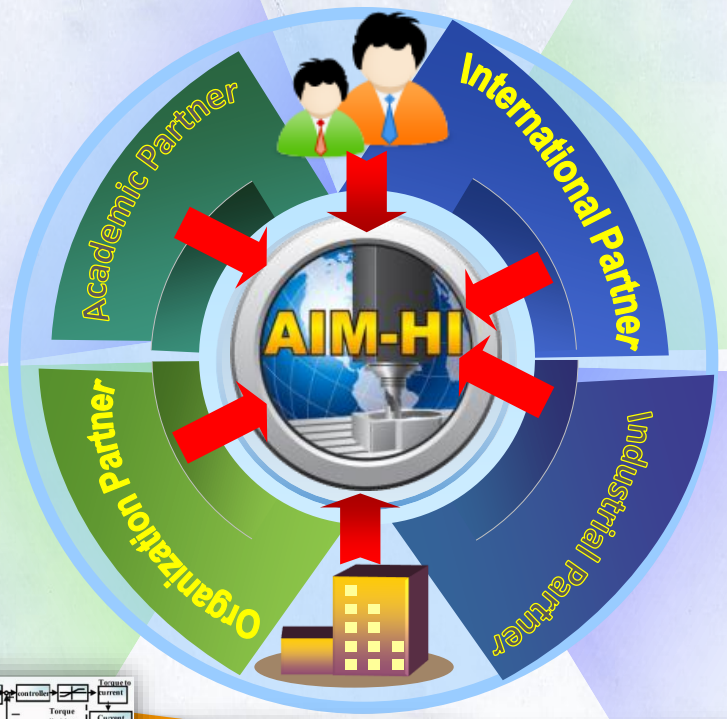
AIM-HI

Our Strengths

A Cross-Disciplinary Team across Engineering, Management, and Social Sciences

TCUS University Alliance, NTU, NTHU, NFU in Taiwan

ITRI, PMC, MIRDC, CSIST, CPC in Taiwan



US: Georgia Tech

UM-Ann Arbor, Stanford

Singapore: NTU, A*STAR

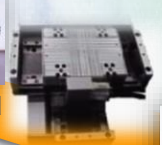
Japan: Osaka University

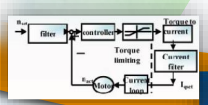
Germany: RWTH Aachen

Tongtai, Victor Taichung, Fair Friend, YCM, Hiwin, Fatek, and LNC

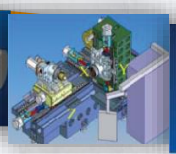

Traditional machine tool (1948-1994)


High-speed spindle (1994-1996)


High-speed feed-drive (1999-2002)

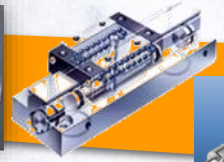

High-speed high-precision controller (2003-2005)


Innovative gear machine (2003-2006)

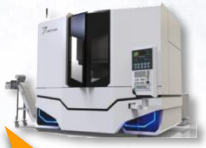

Gear inspection machine (2006-2008)


Gear hobbing machine (2009-2011)


Intelligent tapping center (2008-2011)


Intelligent feed-drive (2011-2014)


Intelligent feed-system (2014-2016)


Development of intelligent gear cutting machine(2017-now)

Our Strengths

Technology, Competence, Internationalization

Key Technologies

- Green Manufacturing
- Smart Sensing
- Intelligent Control

Internationalization

- All-English Program in Advanced Manufacturing Systems
- Elite Student Camp
- Summer Academic Research Program

Industry-academia Collaboration

- Advanced R&D Talent (postgraduate)
- Industry-integrated Degree Program in Advanced Precision Machinery
- Technical Workforce (undergraduate)

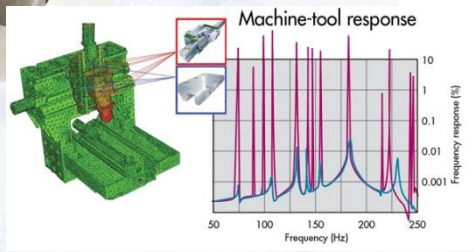
Core competence

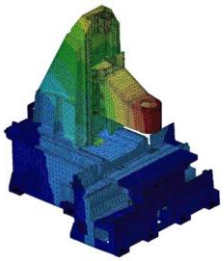
- Industrial fundamental technologies
- Modularized Courses
- Industrial Faculty

Research fields

Control and Automation

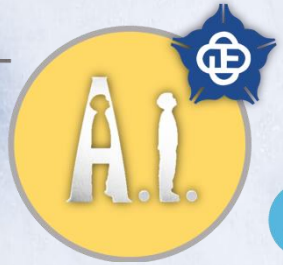
Advanced Manufacturing & Measurement

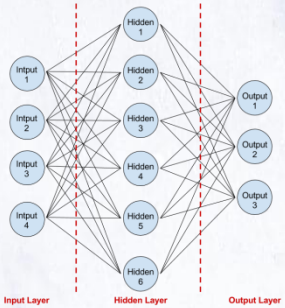




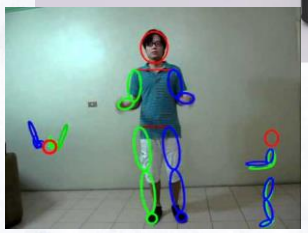
AIM-HI

Artificial Intelligence & Internet of Things





Signal Processing & Communications



40 faculty members from different fields.

All-English taught courses

- Required courses : Seminar (I) Seminar (II)
- Elective courses :

- Modern Control Systems
- Pattern Recognition
- Optomechatronic System Design
- CNC Machine Tool Human Machine
- Interface Design and Application for PC NC Structure
- Engineering Plasticity
- Engineering Analysis (I)
- Engineering Analysis (II)
- Advanced Computer-Aided Geometric Design
- Printing-Based Fabrication of Flexible Electronics
- Software Architecture
- Hydrogen Energy and Fuel Cells
- Intermediate Thermodynamics
- Acoustics
- Computer-Aided Machine Design
- Tribological Design of Mechanical
- Components
- Optomechatronics
- Fundamental Machining Theories and Applications
- Introduction of Virtual Manufacturing and Its Applications
- Solar Power Generation System
- An Introduction to Electric Utility Deregulation
- Computer Vision
- Computer-Aided Manufacturing
- Intermediate Heat Transfer (I)
- Micro/Nano Tribology
- Semiconductor Manufacture Processes
- Operating System
- Compilers
- Video Processing
- Intelligent Control
- Machine Learning and Neural Networks (selected topics)
- Intelligent Vision System for Robot Arm
- Mechanical Behavior of Materials
- Linear Systems
- Elasticity
- Structural Dynamics
- CNC Machine Tool Machining Application and Value-adding Integration Technology
- Computer Integrated Manufacturing
- Virtual Reality Technology and Machinery
- Activity Simulation
- CAM and Application Development Manufacturing System and Strategy
- Power Quality Analysis and Simulation
- Special Topics on Computational Mechanical for Lattice Structure Material

45 ↑ all-English taught courses are offered

Scholarship opportunities

Taiwan Scholarship:

NT$25,000-NT$30,000 per month provided by Ministry of Education of Taiwan, please refer to www.studyintaiwan.org for more information.

CCU International Student Scholarships:

Tuition and dormitory fee (partial) waivers, please refer to International office http://oia.ccu.edu.tw/ciaeenglish/ for more information.

Research Assistantships:

Provided by individual professor, typically NT$6,000 to 10,000 per month.

Teaching Assistantships:

Provided by individual department, typically NT$2,000 to 5,000 per month.

AIM-HI Scholarships (only for AIM-HI students):

NT$ 8,000 per month provided by AIM-HI for full-time students

Please refer to http://aimhi.ccu.edu.tw/page/programs/index.aspx for more information. MUST apply at the beginning semester. No dropped course record.

CCU Oversea Research Scholarship

NT$ 10,000-30,000 per month for outstanding international PhD students provided by CCU

Scholarships + RA for PhD program

Ministry of Education, Taiwan

Matching funding from company

Research and teaching assistant

Guaranteed NTD 25,000-53,000 (USD 800-1,800) per month for 4 years