



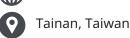
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Ph.D., Engineering Science, National Cheng Kung University 2019 - 2023 M.S., Engineering Science, National Cheng Kung University 2017 - 2019

TECHNICAL EXPERTISE

System Integration & Embedded Systems

- Image Processing & Optical Systems
- Hardware & Software Co-Design
- Project Management & Product Development

SKILLS

- Python
- MATLAB
- Linux
- Taguchi Methods
- SolidWorks
- AutoCAD
- Ansys
- SPSS

WORK EXPERIENCE

• Firstep Bioresearch, Inc. | Project Manager | Project Management & System Integration

2023 Oct. ~ Present

- Led end-to-end project execution, covering planning, scheduling, and technical development.
- Collaborated across teams (R&D, manufacturing, QA, and business) to streamline workflows.
- Designed and developed software & hardware architectures, covering embedded systems, image processing, and automation.
- Monitored progress & mitigated risks to ensure timely project completion.
- Sole lead for a corporate collaboration with CTTI, overseeing both R&D and execution.

RESEARCH & TECHNICAL PROJECTS

• Development of Fully Automated Fecal Sample Analysis System

2024 - 2025

- Developed an automated fecal screening system to improve detection accuracy and reduce errors.
- o Integrated Raspberry Pi, CMOS camera, LED lighting, and light chamber for image analysis.
- Designed the interaction mechanism between Raspberry Pi and PLC to coordinate data processing and mechanical operation.
- Implemented image processing and database management using Python, OpenCV, and SQL.

Development of an Optical Zoom Uncooled Thermal Imaging System for Environmental Observation | Ph.D. Research

- Developed a thermal imaging monitoring system by integrating thermal sensors, zoom lenses, industrial computers, and GPIO modules.
- Applied image processing techniques (NUC, DPC, IE) to enhance image quality using Python and OpenCV.
- Collaborated on mechanical and circuit design, ensuring hardware and software coordination.

Automatic Urinalysis Analyzer for Urine Strips

2022

- Developed an automated system for analyzing URS test strips, reducing environmental and subjective errors in color judgment.
- Integrated Raspberry Pi, CMOS camera, conveyor, LCD, and an enclosed chamber with a fixed light source for controlled illumination.
- Implemented image processing and database management using Python, OpenCV, and SQL.

• Laser Rangefinder Testing Platform

2021

- Developed an optical path alignment system for laser rangefinder testing.
- Designed using SolidWorks and CNC machining, with laser-engraved components.
- Integrated Raspberry Pi, CMOS camera, manual slide table, LCD, and beam splitter for precise measurements.

Temperature Testing Chamber for Cold Finger

2020

- Designed a vacuum chamber with temperature sensors to analyze cooling rate and ultimate temperature.
- Developed hardware using AutoCAD and manufactured via laser engraving.
- Integrated Raspberry Pi, LCD, and temperature sensors for data logging.

Development of Compact Immunoassay System for Helicobacter Pylori Detection | Master's Research

- Designed a portable diagnostic device with Raspberry Pi, CMOS camera, LED illumination, and a controlled light chamber.
- Optimized detection accuracy using the Taguchi method.
- Developed in Python, using OpenCV and SQL.

Refereed Journal Paper

- Lin, K.-W., & Chang, Y.-C. (2021). Embedded immunodetection system for fecal occult blood. Biosensors, 11(4), 106.
- Lin, K.-W., Wang, T.-Y., & Chang, Y.-C. (2021). Impact of top electrodes on the nonvolatile resistive switching properties of citrus thin films. Polymers, 13(5), 710.
- Lin, K.-W., & Chang, Y.-C. (2021). Use of the taguchi method to optimize an immunodetection system for quantitative analysis of a rapid test. Diagnostics, 11(7), 1179.

• Refereed Conference Paper

- Lin, K.-W. & Hou, T.-W. (2016, August). With a controllable mobile apparatus rapid test detection system (in Chinese). In Proceedings of the 20st Nano Engineering and Microsystem Technology Conference, Hsinchu, Taiwan.
- Lin, K.-W., Weng, W.-C. & Lai, C.-F. (2019, June). Development of Immunoassay System for Helicobacter Pylori Detection (in Chinese). In Proceedings of the International Conference on Smart Sensors 2019, Hsinchu, Taiwan.
- Lin, K.-W. & Chang, Y.-C. (2020, October). Immunodetection System for Fecal Occult Blood Rapid Test. In Proceedings of the IEEE 6th International Conference on Applied System Innovation 2020, Taitung, Taiwan.
- Lin, K.-W. & Chang, Y.-C. (2021, September). Using the Taguchi Method to Optimize Immunodetection System for Quantitative Analysis of Rapid Test. In Proceedings of the IEEE 7th International Conference on Applied System Innovation 2021, Chiayi, Taiwan.
- Lin, K.-W. & Chang, Y.-C. (2023, April). Development of An Optical Zoom Uncooled Thermal Imaging System for Environmental Observation. In Proceedings of the IEEE 9th International Conference on Applied System Innovation 2023, Chiba, Japan.

Patent

0	1752684 INTEGRATED CARRIER FOR RAPID TEST KITS	2020 Oct.
0	M610229 DEVICE FOR READING RAPID TEST	2020 Oct.
0	M606957 DEVICE FOR READING RAPID TEST	2020 Oct.
0	1734413 STRIP DETECTING APPARATUS	2020 Mar.

INTERNATIONAL CONFERENCES & EXHIBITIONS

•	International conference "MEMS 2025" – Staff Member	2025 Jan.
•	Bio Asia Taiwan Exhibition – Exhibitor	2020 Jul.
•	MEDICAL FAIR THAILAND - Exhibitor	2019 Sep.
•	Engineering Colleges Partnership Forum in Asia (ECPFA) – Engineering Student Representatives	2019 Aug.
•	Bio Asia Taiwan Exhibition — Exhibitor	2019 Jul.
•	Bio Taiwan Exhibition — Exhibitor	2018 Jul.
•	International conference "Transducers 2017" – Staff Member	2017 Jun

AWARDS & SCHOLARSHIPS

Competitions

0	IIth Instrument Technology Innovation Competition – Finalist	2019 Oct.
0	Ministry of Economic Affairs – Technology Development Program for Academia	2018 Dec.
0	National Cheng Kung University Technology Licensing and Incubation Center – Innovation &	2018 Nov.
	Entrepreneurship Startup Festival	
0	NCKU Dreams Come True Program – "Dreams Come True • Prototype"	2018 Jun.
0	9th Instrument Technology Innovation Competition – Honorable Mention	2017 Jun.

Scholarship

0	Ministry of Economic Affairs, Industrial Development Bureau 5G+ Industry Rising Stars Sailing Program	2022
0	National Cheng Kung University Department of Engineering Science Graduate Institute Scholarships	2021 - 2022
0	Ministry of Science and Technology Encourages Enterprises to Participate in the Pilot Program for	2019 - 2022
	Cultivating Doctoral Students	