

# CHIEH KAO

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## OBJECTIVE

Electrical Hardware Engineer with 5+ years of experience designing and owning mixed-signal PCBA for high-reliability systems, including sensor integration and sensing system architecture, from schematic capture and PCB layout through bring-up, validation, and EVT/DVT/PVT production. Strong background in high-speed digital interfaces, sensor component selection and system-level validation, SI/PI optimization, EMI/EMC compliance, and cross-functional collaboration to deliver production-scalable, high-reliability hardware systems from concept through manufacturing.

## PROFESSIONAL EXPERIENCE

### Gudeng

*Technical Customer Service Engineer*

**Glendale, AZ, USA**

October 2025 - Present

- Defined and owned the system-level electrical architecture, retrofitting FOUP load ports with a nitrogen purge/fill module, reducing humidity levels and improving wafer-surface reliability.
- Integrated the electrical control cabinet for the upgraded load-port system, defining hardware-software interfaces across pneumatic valves, regulators, control PCBs, and network modules to enable closed-loop purge control, real-time sensing, and fault-diagnostics workflow.

### Karh

**New York, NY, USA**

*Hardware Engineer Intern*

June 2024 - August 2024

- Evaluated sensor integration paths for battery management systems to enhance safety monitoring and early detection of abnormal thermal behavior, supporting hardware-level risk mitigation.
- Researched emerging battery technology trends and evaluated competitor products to shape forward-looking R&D strategies and accelerate product innovation.
- Performed comprehensive risk assessments and ensured strict adherence to New York Fire Code regulations, significantly reducing potential safety hazards.

### ASUSTeK Computer Inc.

**Taipei City, Taiwan**

*Senior Hardware Engineer*

November 2017 - April 2022

- Drove HDI PCB/FPC schematic design and system-level hardware integration across multiple ASUS ZenFone platforms, owning mixed-signal architecture from concept through production release.
- Executed electrical and functional validation for high-speed and peripheral interfaces, including MIPI, USB, I<sub>2</sub>C, SPI, and PCIe, ensuring interface compliance and signal robustness.
- Led the integration of motion, Hall, proximity, and ambient light sensors into high-volume smartphone products, owning sensor component selection, schematic/FPC integration, and sensing system optimization across NPI phases from prototyping to mass production.
- Led board bring-up and power sequencing verification through EVT/DVT/PVT, leveraging oscilloscopes and lab instrumentation to close hardware issues and support ESD/EMI/EMC compliance and manufacturing readiness.
- Partnered with firmware, mechanical, and manufacturing teams to resolve customer-reported field failures via structured root cause analysis, translating corrective actions into next-generation design improvements.
- Built automated feature-validation flows and long-term reliability test pipelines for inertial sensing systems, raising mass-production yield to 99% and improving long-term platform stability.
- Invented and patented an automatic camera shutoff mechanism, significantly enhancing drop durability and safeguarding high-value camera modules. (Patent No. 110114582)

## EDUCATION

### Arizona State University

**August 2023 - May 2025**

*Master's, Robotics and Autonomous Systems*

GPA: 3.94

- Relevant coursework: Embedded Systems, Robotic Systems, AI Machine learning, Python Programming, Mechatronic Systems.

### National Sun Yat-sen University

**September 2015 - June 2017**

*Master's, Photonics*

GPA: 3.53

- Relevant coursework: OLED, Solar Cells.

### Chung Yuan Christian University

**September 2011 - June 2015**

*Bachelor's, Electronics Engineering*

GPA: 3.62

- Relevant coursework: Semiconductor.

## ACADEMIC EXPERIENCE

### Arizona State University

- Built "Bennis", an autonomous tennis-ball-collecting robot using ROS 2 and sensor fusion, achieving real-time detection and trajectory prediction; presented at the 2024 Southwest Robotics Symposium.
- Designed a vision-based predictive landing system in MATLAB/Simulink and validated it on a physical drone with real-time tracking and adaptive control. Finalist, MathWorks MiniDrone Competition – U.S. & Canada.
- Deployed a TensorFlow-trained, quantized CNN keyword-spotting system to an Arduino Nano 33 BLE Sense for low-power, real-time inference.
- Programmed a Pololu 3pi+ robot with real-time feedback control using IR and line sensors to autonomously climb and descend ramps, maintaining balance via pitch/roll correction for improved motion stability

### NSYSU

- Contributed to the patents TWI651345B, "Method for manufacturing flexible transparent conductive film and flexible transparent conductive film, transparent electrode, and organic light-emitting diode using the same. (2019)
- Graduate Thesis: "The study of enhanced PEDOT: PSS conductivity via various solvent with different treatments for ITO-free organic light emitting diodes" (2017)

### CYCU

- Department Of Electronic Engineering Capstone Project Competition
- Conferred an award for excellent work related to the capstone project topic, 'Analysis of Nitrogen Laser and Nitrogen Ion Movement in Magnetic Fields'. (2014)

## SKILLS

**Skills:** PDN, Camera, LiDAR, IMU, HDI PCB, PCBA, Board Bring-up, Cadence Allegro, OrCAD, Multimeters, Oscilloscopes, PCIe, USB, MIPI, SPI, I<sub>2</sub>C, Embedded System, Electronic circuits, Robotics, ROS2, SolidWorks, Python, C/C++, MATLAB, AI/ML, TensorFlow, OpenCV, YOLOv8, Linux, Git, Simulink