Hien Vu

hienvu@purdue.edu · 608-515-2815 · hienvuvg.github.io · linkedin.com/in/hienvuvg

System engineer and research architect in ML-powered sensing and wireless systems seeking co-op or full-time R&D roles.

EDUCATION

Purdue University, West Lafayette, Indiana — (expected) August 2026
PhD in Electrical and Computer Engineering (candidate) — GPA: 3.65/4.0

University of Wisconsin–Madison, Madison, Wisconsin — May 2023
MSc in Electrical and Computer Engineering — GPA: 3.82/4.0

Hanoi University of Science and Technology, Hanoi, Vietnam — May 2018
BSc in Electronics and Telecommunications Engineering — GPA: 3.51/4.0

KEY SKILLS

- **Hardware & Embedded**: Verilog, MIPS, RISC-V, PCB Design (Altium), mmWave, UART/I2C/SPI, RF and high-speed design.
- **Software & Algorithms**: Python, C/C++, MATLAB, assembly, bash; sensor fusion, computer vision, signal processing.

PROFESSIONAL EXPERIENCE

NEIS Lab, Purdue University – ***Research Assistant*** – West Lafayette, IN — Aug 2024 – Present

- Architected a machine learning system that uses mmWave radar IWR1843 to track respiration of moving subjects, achieved pose tracking error < 5 cm for 97% of the time and respiration error < 3 bpm 91% of the time in breathing range 10-45 bpm.
- Developed two sensing systems including a high-precision Ultra-Wideband localization system, and optimization-based multi-view visual 3D localization and tracking of dairy cattle, both achieved centimeter accuracy.
- Engineered an end-to-end multimodal ML fusion pipeline (UWB+IMU+RGB) for subject tracking and behavior monitoring.
- Designed a distributed data ingestion pipeline for 9 sensor modalities, automating temporal synchronization (drift < 10ms) and annotation validation for 300k seconds of data, published at NeurIPS 2024 as MmCows dataset.

WISEST Lab, UW-Madison – ***Research Assistant*** – Madison, WI — Aug 2021 – Jul 2024

- Developed eTag, an energy-neutral sensing system using backscatter communication, published at ACM MobiCom 2023.
- Designed a novel shared-coil architecture for simultaneous RFID communication and wireless charging in wearable devices, solving mutual coupling problem while realizing a compact design that is 30% the size of standard dual-coil hardware designs.
- Developed energy-efficient firmware for RFID scanning using STM32-based LoRa SoC that reduced the energy cost by 15x, and engineered a closed-loop wireless power transfer protocol for autonomous charging of wearable devices.

EC Lab, Soongsil University – ***Research Assistant*** – Seoul, South Korea — Mar 2019 – Jul 2021

- Designed a flexible, portable supercapacitor-based power device using cascade multiphase DC-DC buck power converter that delivers 840W in 5-second pulses, optimizing energy density and form factor for rapid and critical military applications.
- Developed a novel bidirectional buck-boost control policy that enables uninterrupted power delivery and continuous system operation under dynamic load conditions, surpassing system design specs in functionality.
- Designed a high-speed FPGA-based flash storage system with 512GB SLC-NAND using Altium Designer, ensuring signal integrity and minimizing propagation delay across 1,000+ components.
- Implemented Extended Kalman Filter on a RISC-V MCU to process 9-DOF IMU data for precise pose tracking in AR/VR apps.

Interland Inc. – ***System Engineer*** – Hanoi, Vietnam — Jun 2018 – Feb 2019

- Investigated sensing solutions for measuring dissolved oxygen in water, and integrated with IBM-based cloud service for large-scale automated shrimp farming.

PROJECT LEADERSHIP

- Led the development efforts of the flexible Conformal Wearable Battery (CWB) device, including system testing, integration, and technology transfer from research lab to DoD contractor for real-world production.
- Recruited and trained a team of 20+ people to curate the MmCows large-scale multimodal dataset (20k annotated of 4.8M RGB images) while ensuring data synchronization and annotation accuracy using automated visual localization.
- Collaborated and led a cross-discipline team to design and deploy eTag as a multi-node IoT network on multiple production cattle, analyzing over 2,000 hours of field data to validate system reliability in complex operational settings.