Hien Vu

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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) Aug 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

Doctoral Researcher – ***NEIS Lab, Purdue University*** – West Lafayette, IN — Aug 2024 – Present

- Architected a machine learning system that uses TI IWR1843 mmWave radar 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 distinct localization systems: a high-precision Ultra-Wideband tracking network and an optimization-based multi-view visual localization system, both achieved centimeter accuracy in real-time tracking.
- Engineered an end-to-end multimodal ML fusion pipeline (UWB+IMU+RGB) for subject tracking and behavior monitoring.
- Designed a data ingestion pipeline for 9 sensor modalities, automating temporal synchronization (drift < 10ms) and annotation validation for 213k bounding boxes, published as the MmCows benchmark at NeurIPS 2024.

Graduate Research Assistant – ***WISEST Lab, UW-Madison*** – 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, mitigating the mutual coupling problem while reducing footprint by 30% compared to standard dual-coil 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.

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

- Designed a flexible, portable supercapacitor-based conformal wearable battery using cascade multiphase buck 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 required for technology transfer.
- Designed a high-speed FPGA-based flash storage system with 512GB SLC-NAND using Altium Designer, minimizing propagation delay and ensuring signal integrity 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.

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

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

PROJECT LEADERSHIP

- Led the full-lifecycle development of the conformal wearable battery, delivering a production-grade system that passed rigorous DoD testing and achieved successful technology transfer to DoD contractor.
- Recruited and trained a team of 20+ people to curate the MmCows large-scale multimodal dataset (20k annotated out of 4.8M RGB images) while ensuring data synchronization and annotation accuracy.
- 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.