

# 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

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|--|---------------------|
| <b>Purdue University</b> , West Lafayette, Indiana                 | (expected) Aug 2026 |
| PhD in Electrical and Computer Engineering (candidate)             | GPA: 3.65/4.0       |
| <b>University of Wisconsin-Madison</b> , Madison, Wisconsin        | May 2023            |
| MSc in Electrical and Computer Engineering                         | GPA: 3.82/4.0       |
| <b>Hanoi University of Science and Technology</b> , 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

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|---|---------------------|
| <b>NEIS Lab, Purdue University – Research Assistant</b> – West Lafayette, IN  | Aug 2024 – Present  |
| <ul style="list-style-type: none"><li>• Architected a machine learning system that uses TI IWR1843 mmWave radar to track respiration of moving subjects, achieved pose tracking error &lt; 5 cm for 97% of the time and respiration error &lt; 3 bpm 91% of the time in breathing range 10–45 bpm.</li><li>• 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.</li><li>• Engineered an end-to-end multimodal ML fusion pipeline (UWB+IMU+RGB) for subject tracking and behavior monitoring.</li><li>• Designed a distributed data ingestion pipeline for 9 sensor modalities, automating temporal synchronization (drift &lt; 10ms) and annotation validation for 213k bounding boxes; published as the MmCows benchmark at NeurIPS 2024.</li></ul> |                     |
| <b>WISEST Lab, UW-Madison – Research Assistant</b> – Madison, WI  | Aug 2021 – Jul 2024 |
| <ul style="list-style-type: none"><li>• Developed eTag, an energy-neutral sensing system using backscatter communication, published at ACM MobiCom 2023.</li><li>• 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.</li><li>• 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.</li></ul>   |                     |
| <b>EC Lab, Soongsil University – Research Assistant</b> – Seoul, South Korea  | Mar 2019 – Jul 2021 |
| <ul style="list-style-type: none"><li>• 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.</li><li>• 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.</li><li>• 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.</li><li>• Implemented Extended Kalman Filter on a RISC-V MCU to process 9-DOF IMU data for precise pose tracking in AR/VR apps.</li></ul>                                      |                     |
| <b>Interland Inc. – System Engineer</b> – Hanoi, Vietnam  | Jun 2018 – Feb 2019 |
| <ul style="list-style-type: none"><li>• Investigated sensing solutions for measuring dissolved oxygen in water, and integrated with IBM-based cloud service for large-scale automated shrimp farming.</li></ul>   |                     |

## 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 using automated visual localization.
- 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.