Hien Vu

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A researcher specializing in the end‑to‑end development and optimization of machine learning models, wireless sensing, and embedded systems. Seeking an R&D role (co‑op or intern) to translate complex research into tangible technological solutions.

EDUCATION

Ph.D. in Electrical and Computer Engineering , GPA: 3.65 (candidate)   (expected) 2024–2026
Purdue University, West Lafayette, Indiana, USA

M.Sc. in Electrical and Computer Engineering, GPA: 3.82   2021–2023
University of Wisconsin–Madison (UW‑Madison), Wisconsin, USA

B.Sc. in Electronics and Telecommunications Engineering, GPA: 3.5   2014–2018
Hanoi University of Science and Technology (HUST), Hanoi, Vietnam

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; sensor fusion, computer vision, signal processing.

PROFESSIONAL EXPERIENCE

Research Assistant, NEIS Lab, Purdue University, Indiana, USA   2024–Present
- Engineered an advanced mmWave radar and Edge AI system to track respiration of multiple moving subjects, achieving high accuracy in harsh environments for health monitoring applications.
- Architected an end‑to‑end multimodal sensor fusion pipeline for behavior classification, providing strategic insights on design trade‑offs to optimize system cost and complexity.
- Recruited and trained a team of 20+ people to curate a massive multimodal dataset (20k RGB images, 300k seconds of data) for accelerating research in temporal‑behavior classification.

Research Assistant, WISEST Lab, UW‑Madison, Wisconsin, USA   2021–2024
- Designed a wearable sensor tag with a shared‑coil architecture for simultaneous RFID and wireless charging, solving mutual coupling problem to realize a compact wearable design.
- Developed an optimized embedded firmware that reduced RFID energy costs by 15x and engineered a closed‑loop wireless power transfer protocol to enable perpetual device operation.
- Collaborated with cross‑discipline teams to design and deploy a multi‑node IoT network, analyzing over 2,000 hours of field data to validate system reliability in complex operational settings.

Research Assistant, EC Lab, Soongsil University, Seoul, South Korea   2019–2021
- Designed a flexible, portable supercapacitor power device delivering 840W pulses, optimizing energy density for high‑demand and critical military applications (photos 🖼).
- Developed a bidirectional buck‑boost control algorithm enabling uninterrupted power delivery and continuous system operation under dynamic load conditions.
- Implemented a high‑speed FPGA‑based design for 512GB SLC‑NAND flash storage, ensuring signal integrity and minimizing propagation delay across 1,000+ components (photos 🖼).
- Implemented an Extended Kalman Filter on a RISC‑V MCU to process 9‑DOF IMU data, integrating with Parallel Tracking and Mapping (PTAM) for real‑time 3D pose estimation in AR applications (see demo ▶).

Research Assistant, SPARC Lab, HUST, Hanoi, Vietnam   2015–2018
- Built a gyroscope‑based balancing system using Linear‑Quadratic‑Gaussian regulator for two‑wheeled vehicles.
- Managed a team of 10+ people to design, produce, and deploy 100 air‑quality monitoring devices throughout Hanoi city.

SELECTED PROJECTS

MmCows: Multimodal Deep Learning Benchmark (NeurIPS)   2024
- Created a large‑scale multimodal dataset accepted as a Spotlight paper (top 5% of ratings) at NeurIPS 2024. Benchmarked state‑of‑the‑art action recognition models to advance edge computing capabilities.

eTag: Battery‑Free Wireless Sensing System (ACM MobiCom)   2023
- Developed an end‑to‑end energy‑neutral sensing system published at ACM MobiCom (24% acceptance rate), leveraging backscattering for communication and inductive coupling for power delivery, enabling maintenance‑free health monitoring.

5‑Stage Pipelined CPU Design │ Course Project   2022
- Designed and verified a fully functional 32‑bit MIPS processor in Verilog with 5‑stage pipeline and L1‑level cache. Engineered hazard detection units and data forwarding paths to resolve data and control hazards.