Hien Vu

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A researcher with expertise in developing solutions for ML systems, low-power sensing, and electronics optimization. Seeking a challenging role to leverage problem-solving and cross-disciplinary skills to drive impactful research.

EDUCATION

Ph.D. in Electrical and Computer Engineering (expected) 2026
Purdue University, West Lafayette, Indiana, USA

M.Sc. in Electrical and Computer Engineering 2023
University of Wisconsin–Madison, Madison, Wisconsin, USA

B.Sc. in Electronics and Telecommunications Engineering 2018
Hanoi University of Science and Technology, Hanoi, Vietnam

PROFESSIONAL EXPERIENCE

Research Assistant, Purdue University, WL, IN, USA 2023–Present

- Working on radar-based wireless sensing mechanisms for dairy cattle health monitoring.
- Developed a multimodal sensing system including high-precision indoor localization, physiological monitoring, and ML-based computer vision for identification and tracking of dairy cattle.

Research Assistant, University of Wisconsin–Madison, Madison, WI, USA 2021–2023

- Developed a lightweight, non-invasive wearable ear tag to monitor dairy cattle body temperature in real-time for heat stress detection.
- Engineered a wireless power system that autonomously charges the tag during 10-minute milking sessions, enabling up to five days of continuous operation on a single charge.
- Fabricated and deployed seven prototype tags in a three-week field trial at UW-Madison's operational dairy barn, assessing real-world performance in cattle management.
- Collaborated with cross-disciplinary teams to ensure seamless integration of hardware, firmware, and data collection systems for accurate and continuous monitoring.

Research Assistant, Soongsil University, Seoul, South Korea 2019–2021

- Designed a flexible, high-energy supercapacitor-based power device for military applications, capable of delivering 840 W in multiple 5-second discharge cycles. Developed a bi-directional buck-boost control algorithm to ensure continuous system operation without interruptions.
- Developed pre-heating techniques for lithium battery in cold environments using a novel energy exchange process to balance temperature and state of charge without requiring cell characterization.
- Developed a high-speed, custom storage device using an FPGA controller and 512GB of SLC-NAND flash (with more than 1000 components), optimizing signal integrity and minimizing delay.
- Implemented an Extended Kalman Filter on a RISC-V MCU for pose tracking in augmented reality, processing data from a 9-DOF IMU integrated with Parallel Tracking and Mapping (PTAM).

Research Assistant, Hanoi University of Science and Technology, Hanoi, Vietnam 2015–2018

- Developed a gyroscope-based balancing system for two-wheel personal vehicles.
- Designed air pollution monitoring devices and deployed on a large scale.

KEY SKILLS

- **Software & AI**: Python, C/C++, MATLAB; Machine Learning Models, Signal Processing, System Modeling.
- **System Design**: Embedded/Real-Time Systems, Low-Power/Wireless Systems, Full-Stack System Development.

SELECTED PUBLICATIONS

- **MmCows**: A Multimodal Dataset for Dairy Cattle Monitoring. *NeurIPS 2024 (Spotlight paper, top 5% ratings)*.
- **eTag**: An Energy-Neutral Ear Tag for Real-Time Body Temperature Monitoring of Dairy Cattle. *ACM MobiCom 2023 (acceptance rate 24%)*.
- Simultaneous Internal Heating for Balanced Temperature and State-Of-Charge Distribution in Lithium-ion Battery Packs. *Journal of Energy Storage 2023*.