

ABHISHEK VERMA

Associate Professor, Engineering and Technology Department
University of Wisconsin-Stout Polytechnic

PROFESSIONAL PROFILE

Aerospace engineer and applied educator with expertise spanning **uncrewed aerial systems (drones), autonomous systems, artificial intelligence (AI), guidance and navigation, and engineering education**. Nine years of university teaching experience at UW-Stout (Fall 2017 – current), with leadership in UAV curriculum development, interdisciplinary applied research, externally funded projects, and international engineering education.

PROPOSAL-RELEVANT STRENGTHS

UAV Curriculum Leadership Developed UW-Stout’s introductory UAV course (2019) and the Uncrewed Aerial Systems minor (2024) focused on real-world applications of UAVs in various fields across engineering and non-engineering programs.	AI & Autonomous Systems UW-Stout AI Fellow (Spring 2025), with research experience in human and autonomous learning, reinforcement learning, navigation, and path planning.
Applied, Funded Research Contributed to two major externally funded UW-System projects totaling \$291,832, including drone-based freshwater monitoring and agricultural innovation.	Interdisciplinary & Global Collaboration Experience connecting engineering with renewable energy, agriculture, international coursework, and collaborative online learning.

ACADEMIC APPOINTMENTS

Associate Professor, Engineering and Technology Department, UW-Stout	Aug. 2024–Present
Assistant Professor, Engineering and Technology Department, UW-Stout	Aug. 2018–May 2024
Instructor, Engineering and Technology Department, UW-Stout	Aug. 2017–May 2018

EDUCATION

PhD, Aerospace Engineering <i>University of Minnesota, Twin Cities, USA</i> Dissertation: Learning of Unknown Environments in Goal-Directed Guidance and Navigation Tasks: Autonomous Systems and Humans	2011–2018
BS + MS Dual Degree, Aerospace Engineering <i>Indian Institute of Technology Kanpur, India</i> Dissertation: Three-Dimensional Linear Stability Analysis of Flows past Bluff Bodies	2006–2011

CURRICULUM DEVELOPMENT & TEACHING

- **Developed** Uncrewed Aerial Vehicles (ETECH 333), a project-based course for STEM students (2019).
- **Developed** the Uncrewed Aerial Systems Minor for STEM students at UW-Stout (2024).
- **Courses taught:** System Dynamics, Dynamics, Heat Transfer, Uncrewed Aerial Vehicles, and Impacts of Engineering.

SELECTED FUNDED PROJECTS

Universities of Wisconsin Innovation Grant — \$175,000 <i>University of Wisconsin-Stout Polytechnic</i> Member of an interdisciplinary engineering–social science team developing a low-cost, energy-efficient wireless sensor network for small farms. Sensors monitor soil moisture, temperature, humidity, wind, and other field conditions; farmer feedback guides human-centered design and crop decisions. Project article	2024–2025
Freshwater Collaborative of Wisconsin Grant — \$116,832 <i>University of Wisconsin-Stout Polytechnic</i> Collaborated on an integrated workflow using commercial drones, hyperspectral imaging, image processing, and fluid-flow simulation to map drainage patterns and identify potential farm-runoff contaminants before they reach waterways. Project article	2021–2022

SELECTED PEER-REVIEWED JOURNAL PUBLICATIONS

- Verma, A., & Mettler, B. (2017). "Human Learning of Unknown Environments in Agile Guidance Tasks."
- Mettler, B., Verma, A., & Feit, A. (2017). "Emergent Patterns in Agent-Environment Interactions and their Roles in Supporting Agile Spatial Skills." Annual Reviews in Control.
- Verma, A., & Mettler, B. (2016). "Computational Investigation of Environment Learning in Guidance and Navigation." Journal of Guidance, Control, and Dynamics.
- Verma, A., & Mettler, B. (2016). "Scaling Effects in Guidance Performance in Confined Environments." Journal of Guidance, Control, and Dynamics.
- Mittal, S., GS, S., & Verma, A. (2014). "A Finite Element Formulation for Global Linear Stability Analysis of a Nominally Two-Dimensional Base Flow." International Journal for Numerical Methods in Fluids.
- Verma, A., & Mittal, S. (2011). "A New Unstable Mode in the Wake of a Circular Cylinder." Physics of Fluids.

SELECTED CONFERENCE PUBLICATIONS & PRESENTATIONS

- Verma, A., & Ghosh, A. (2026). "Project-Based Curriculum Design for an Introductory UAV Course." IEEE Frontiers in Education Conference. Accepted.
- Xing, Y., Verma, A., Liu, C., et al. (2026). "HiMAP: Hierarchical Human-in-the-Loop Multi-Agent Reinforcement Learning for Collaborative Path Planning." IEEE World AI IoT Congress. Accepted.
- Xing, Y., Verma, A., Zeng, Z., et al. (2024). "Cluster-Based Genetic Algorithm Path Planning for Cooperative UGV and UAV Operations in Energy-Efficient Wireless Sensor Networks." IEEE UEMCON.
- Xing, Y., Hou, D., Liu, J., et al. (2024). "Deep Learning and Game Theory for AI-Enabled Human-Robot Collaboration System Design in Industry 4.0." IEEE CCWC.
- Xing, Y., & Verma, A. (2023). "Optimize Path Planning for Drone-Based Wireless Power Transfer System by Categorized Reinforcement Learning." IEEE CCWC.
- Ghosh, A., & Verma, A. (2022). "Implementing Collaborative Online International Learning (COIL) in Regular Engineering Coursework." IEEE Frontiers in Education Conference.
- Verma, A., Baltaci, K., & Herrmann, M. (2022). "Interdisciplinary Collaboration to Engage Engineering Students' Interest in Renewable Energy Concepts." ASEE Annual Conference & Exposition.
- Verma, A., Benders, S., Dauer, J. C., & Adolf, F. M. (2018). "Benchmarking Unmanned Rotorcraft Trajectories based on Dynamic Fit." AIAA Aerospace Sciences Meeting.
- Xing, Y., See, J., Dzissah, J., Verma, A., & Liu, C. (2025). "Hiercharge: Low-Complexity Hierarchical Optimization for Scalable IoT Energy Solution." IEEE WAMICON.
- Xing, Y., Zeng, Z., Liu, C., Verma, A., et al. (2024). "Optimizing Sleep Schedules for Energy-Efficient Agricultural Wireless Sensor Networks Using Deep Reinforcement Learning." IEEE UEMCON.
- Ghosh, A., & Verma, A. (2021). "Thematic Analysis of Reflective Peer Feedback in Programming-Heavy Engineering Courses." IEEE Frontiers in Education Conference.
- Verma, A., & Mettler, B. (2019). "Analysis of Human Interaction Patterns Emerging while Learning Agile Navigation of Unknown Environments." IFAC-PapersOnLine.

AWARDS, CREDENTIALS & PROFESSIONAL DEVELOPMENT

UW-Stout AI Fellowship: Spring 2025

Graduate Student Teaching Award: University of Minnesota, 2017

Academic Excellence Award: IIT Kanpur, 2009

OPID Faculty College: University of Wisconsin System, 2022

FAA Private Pilot License: September 2020

FAA Remote Pilot License: March 2024

International Teaching: Zhengzhou University collaboration, 2019–2024

SERVICE AT STOUT

- **UW–Stout Institutional Representative, Wisconsin Space Grant Consortium (WSGC):** Represent UW–Stout in consortium activities and support opportunities connecting students and faculty with aerospace and space-related education and projects.
- **Faculty Advisor, Aerospace Club:** Advise and support student-led aerospace activities, technical projects, and professional development.
- **University, College, and Department Committees:** Served on multiple governance and service committees, including the **Personnel Policies Committee (PPC)** and **Planning and Review Committee (PRC)**.
- **Search Committees:** Participated in search committees such as **Computer and Electrical Engineering Search Committee**.