Ian Wilhite

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EDUCATION

Texas A&M University, College Station, Texas — May 2026

Bachelor of Science in Interdisciplinary Engineering in **Robotics and Controls Engineering** — GPA: 3.16/4.00

Minors: **Control of Mechanical Systems, Math**

Relevant Coursework:

Autonomous Aerospace Systems, *Aerial Autonomy Foundations*, *Dynamics and Feedback Control*, *Signals & Systems*, *Vibrations and Dynamics*, *Numerical Methods for Simulation*, *Experimental Measurement & Sensor Analysis*, *Geometric Modeling & Design*, *Data Structures & Algorithms*, *Object-Oriented Programming Software Design*, *Linear Algebra*, *Discrete Mathematics*

PROFESSIONAL SUMMARY

Robotics & Controls Engineering student at Texas A&M experienced in deploying mobile robotic platforms. Passionate about research in autonomous mobile systems leveraging control systems, ML, and dynamic game theory for UAVs and AUVs. Proficient in ROS2, PX4, and C++ for development and deployment. Pursuing graduate research programs starting in Fall of 2026.

RELEVANT EXPERIENCE

Aggie Autonomous Robotics Research Group (AARRG), A&M Dept. of Computer Science — College Station, TX

Undergraduate Researcher (Thesis) — Aug. 2025 – Preset

- Developing a simulator and kinodynamic hybrid controller for the AQUA2 flipper-actuated underwater robot
- Implemented a PINN to identify linear and nonlinear hydrodynamic parameters to improve simulator fidelity
- Tuned and validated simulation environments, incorporating learned dynamics for inertial lag and actuation hysteresis
- Conducting literature review and authoring an Undergraduate Research Scholars (URS) thesis

Texas A&M University Robotics Team & Leadership Experience (TURTLE) — College Station, TX

Project Lead & Founder - Disaster Response Observation Network (DRON) — Jan. 2024 – Present

- Leading 16 engineers to develop a UAV swarm under $2k to aid emergency responders in structural fire analysis and response
- Formulated system architecture and autonomy platform using a PX4 firmware, Raspberry Pi, and cameras under $500 per unit
- Utilizing OpenCV to implement a GCS visualization pipeline to map depth and temperature into Unity from multiple UAVs
- Designed custom airframes in SolidWorks and fabricated in-house using 3D printing, integrating electronics and novel sensors

Army Research Lab, University of Maryland — Adelphi, MD

Aerial Autonomy Intern — June 2025 – Aug. 2025

- Developed and deployed UAV autonomy stacks using PX4, QGroundControl, and ROS2 Humble & Foxy, including Docker-based offboard control nodes with perception pipelines and onboard vision-based navigation
- Implemented offboard control with perception-based navigation pipelines to perch a UAV on a wire with 90% success rate
- Performed Software-In-The-Loop (SITL) and Hardware-In-The-Loop (HITL) simulation for Verification and Validation (V&V) before field testing to accelerate deployment timeline and complete perching project 3 weeks ahead of schedule
- Collected multimodal datasets from UAV flights, synchronizing optical flow, visual, and inertial data to support evaluation of perception and autonomy algorithms
- Built, assembled, piloted, and repaired UAVs, including manual override during experimental field autonomy tests
- Implemented spatiotemporal signal processing and matched filter banks for optical flow-based wire detection, enabling real-time velocity estimation to expand autonomous perception pipelines
- Iterated hook designs for slung load interception using SolidWorks; validated through successful fiber-optic-disabling field tests

NASA L'SPACE: Mission Concept Academy (MCA) — Tempe, AZ

Project Manager — May 2025 – Aug. 2025

- Led a 22-member team in end-to-end development to a Preliminary Design Review (PDR) for a conceptual NASA Discovery-class Mars rover mission on subsurface ice detection and ISRU analysis under the Science Mission Directorate
- Primarily authored and directed the creation of 500+ pages of technical documentation outlining mission goals, system requirements, proposed system architecture, programmatic basis, and concept of operations
- Directed trade studies and system requirements across engineering subsystems: Mechanical, Power, Thermal, Command & Data Handling (CDH), and Instrumentation
- Determined Technology Readiness Level (TRL) and risk matrices for CDH subsystem, ensuring overall system design viability

Human-Empowering Robotics & Controls Lab (HERC), A&M Dept. of Mechanical Engineering — College Station, TX

Undergraduate Researcher — Jan. 2024 – May 2024

- Evaluated material properties and assembled bill of materials (BOM) for silicon human leg analog on exoskeleton testbed
- Maintained lab facilities, generated documentation for ongoing projects, and contributed to literature review

Texas A&M Students' Engineering Council (SEC) IGNITE Competition College Station, TX

Design Competition – 3rd Place Nov. 2024

- Led a 4-person team to conceptualize a gimbaled thrust-vectoring system, delivering an oral presentation and technical report
- Directed landing gear Finite Element Analysis (FEA), nose and body Computational Fluid Dynamics (CFD), Guidance, Navigation, and Control (GNC) system simulation, and pitched a Minimally Viable Product (MVP) to industry experts
- Designed a 1-Degree-Of-Freedom (DOF) Model Predictive Controller (MPC) for satisfactory landing along intended trajectory
- Achieved perfect score on technical report and oral presentation; "The analysis delivered went above and beyond."
- Won 3rd place out of 20+ teams in the Aerospace-Mechanical competition track

360 Testing Co. Yonkers, NY

Test Engineering Technician June 2018 – Dec. 2023

- Designed novel test methodologies past ASTM standards, Verifying and Validating (V&V) results for 10+ non-standard projects
- Quoted testing methodologies, constructed custom testing apparatus, documented results, and delivered two client projects
- Composed technical reports to deliver test results and observed insights to customers, enabling critical design evaluations

Jumping Jack Project:

- Developed and maintained a robotic pneumatic piston assembly to perform eight sets of 1000-hour trampoline lifecycle tests

Shuman Project:

- Produced a 2 DOF pneumatic impact cycle testbed to drag a 200-lb load down a shingled roof for shoe life cycle testing

Kent Electronics Grand Prairie, TX

Electrical Technician Mar. 2022 – Sept. 2022

- Soldered 250+ Printed Circuit Boards with SMA connectors for military, industrial, and commercial RF systems
- Conducted product validation and signal integrity testing across frequency bands to verify datasheet performance
- Designed, prototyped, and produced an antenna clip in Fusion 360 for hobbyist source finding ("fox hunt") applications

PUBLICATIONS AND PRESENTATIONS

- **I. Wilhite,** J. O'Kane, "Reinforcement Learning-Based Controller Layer for Hybrid Control of Autonomous Underwater Vehicles", TAMU OakTrust Thesis Repository, April 15th, 2026 [Undergraduate Thesis]
- **I. Wilhite**, B. Gastel, "Disaster Response Observation Network (DRON): Autonomous UAV Swarm for Disaster Assessment", 2025 REEU Science Influencers' Research Symposium, November 13th, 2025 [Oral Presentation]
- **I. Wilhite,** A. Piper, D. Khan, A. Negron, et al., "Preliminary Design Review: PHOENIX", NASA L'SPACE Mission Concept Academy, August 17th, 2025 [Program Deliverable]
- **I. Wilhite,** C. Brown, J. Chen, "Active Perception Using UAV Ego-Motion Induced Optical Flow for Wire Detection and Perching", Army Research Lab Symposium, August 7th, 2025 [Research Poster]
- C. Brown, J. Chen, J. Chen, M. Mueller, **I. Wilhite,** "ARL Aerial Autonomy", University of Maryland Summer Research Symposium, August 6th, 2025 [Oral Presentation]
- **I. Wilhite,** A. Briggs, J. Fuerst, E. Hannsz, et al., "Disaster Response Observation Network (DRON)", TURTLE Robotics Project Showcase, April 17th, 2025 [Showcase Poster]
- E. Burciaga-Ichikawa, K. Jaroszewski, J. Sopala, **I. Wilhite,** "Development of a Rocket Landing Simulation Using a Gimbal and Landing Gear", Texas A&M S.E.C. Ignite Design Challenge, November 23rd, 2024 [Design Competition Submission]
- **I. Wilhite,** A. Briggs, J. Fuerst, E. Hannsz, et al., "Disaster Response Observation Network (DRON)", TURTLE Robotics Project Showcase, November 22nd, 2024 [Showcase Poster]
- A. Ayala*, J. Adamson, A. Alvarado, A. Briggs, F. Chim, C. Creer, M. Ferguson, J. Fuerst, E. Hannsz, A. Peralta, B. Russell, **I. Wilhite**, L. Ybarra, A. Velez, "Disaster Response Observation Network (DRON)", TURTLE Robotics Project Showcase, April 26th, 2024 [Showcase Poster]

LICENSES AND CERTIFICATIONS

FAA: Part 107 Pilot License for Small Unmanned Aircraft System (sUAS) Aug. 2025

Certified SolidWorks Associate (CSWA) Nov. 2024

Licensed Ham Radio Operator May. 2015

SKILLS

Programming & Operating Systems: C++, C, C#, Embedded C, Python, ROS, ROS2, Java, LaTeX, Bash, HTML, Linux

Libraries and Dev Tools: Git, GitHub, Visual Studio Code (VS Code), OpenCV (Computer Vision), NumPy, Pandas, TensorFlow

Software Development & Systems Engineering: Raspberry Pi, Docker deployments, GitHub & PR review, Model-Based Design

Computer Aided Design (CAD): SolidWorks, Siemens NX, Fusion 360 – Parametric Modeling, Finite Element Analysis Simulation

Computer Aided Engineering (CAE): MATLAB, Simulink, Gazebo, Isaac Sim, Unity, Digital Twin Modeling

Unmanned Aerial Vehicles (UAV): Pixhawk (PX4), QGroundControl (QGC), Betaflight, Ardupilot, MAVLINK & MAVSDK

Artificial Intelligence (AI) and Machine Learning (ML): Reinforcement Learning (RL), Stable Baselines, Gym environments

ACTIVITIES

TAMU American Society of Mechanical Engineers (ASME) College Station, TX

President May 2025 – Present

- Driving ASME's mission by connecting an engineering community with mentorship, industry, and hands-on design programs
- Leading a 36-person executive & officer team to serve 1,000+ students through workshops, socials, and industry nights
- Managing 25+ industry relationships and a $100k budget while growing the ASME Career Fair to 600+ attendees

Executive Secretary May 2024 – May 2025

- Led 7 officers to oversee all professional mixers, promotions, outreach, social media, and retreats under budget with $15k+
- Pioneered organizational promotions to grow our communications platform from 196 to 672 members in one calendar year

Texas A&M University Robotics Team & Leadership Experience (TURTLE) College Station, TX

Internal Vice President May 2025 – Present

- Managing $25k+ annual budget, 500+ applications, and facility space to support 22 research projects and 300+ members
- Increased sponsorship income by nearly 7x from $3k/year to $20k+/year to procure materials for production-phase projects
- Leading 9 officers to procure project hardware, design merchandise, expand lab facilities, and maintain organization facilities
- Facilitated College of Engineering Partnership, bringing in the single largest recurring donation valued at ~$10k /year

EXPERIENCE

Department of Mechanical Engineering, *Texas A&M* – College Station, TX

Dynamics and Vibrations Teaching Assistant Aug. 2025 – Present

- Grading homework, writing rubrics, and providing academic support for 50+ upperclassmen Mechanical Engineering students

United States Department of Agriculture (USDA), Texas A&M AgriLife - College Station, TX

Science Influencer Jan. 2025 – Present

- Generating STEM content on robotics, attending professional conferences, and presenting at symposiums
- Representing Texas A&M and the United States Department of Agriculture on social media and to funding agencies

Texas A&M Department of ResLife - College Station, TX

Resident Advisor Jan. 2024 – May 2025

- Resolving active crises and coordinated community program for 400+ residents to create a welcoming atmosphere
- Demonstrated adaptability and problem-solving skills to address diverse resident needs, ensuring effective conflict resolution

Philmont Scout Ranch - Cimmaron, NM

Trail Crew Foreman May 2024 – Aug. 2024

- Organized 2000+ man-hours of labor while maintaining worksite safety to reach project checkpoints on schedule
- Planned 28 days of trek itineraries and commissary orders to execute program elements with limited resources

AWARDS

Unversity Research Scholars (URS) – Texas A&M Honors Office of Undergraduate Research	Sept. 2025
Multidisciplinary Engineering Scholar – Texas A&M Multidisciplinary Engineering Dept.	Aug. 2025
Best Oral Presentation - University of Maryland, Joint Research Laboratories	Aug. 2025
James E. West Fellow – Boy Scouts of America, National Endowment	Jan. 2024
Grand Challenges Scholar – Texas A&M College of Engineering & National Science Foundation	Nov. 2023
Vigil Honor – The Order of the Arrow	Feb. 2022
Eagle Scout – Boy Scouts of America	Mar. 2021