Isabel Moore

US Citizen · College Station, TX
isabelmoore717@gmail.com (253) 250-7416 linkedin.com/in/isabel-moore isabelmoore.github.io

EDUCATION

Texas A&M University
Master of Science in Computer Engineering — Graduation: May 2026
Thesis: Meta Reinforcement-Learning based Contextual Adaptive-Control
Bachelor of Science in Mechanical Engineering — Graduation: May 2024

EXPERIENCE

Computer Vision Researcher — Aug 2024 - Present
Computer Vision & Robotics Laboratory — *College Station, TX*

- Enhanced autonomous vehicle (AV) data engine, optimizing data preprocessing, model training, and workflows for perception research with Mcity.
- Integrated multi-task learning models for depth estimation and semantic segmentation, optimizing training and weight refinement to improve precision and robustness.

Machine Learning Controls Researcher — May 2024 - Present
Bush Combat Development Complex — *Byran, TX*

- Led reinforcement learning-based differential drive controller development for autonomous systems, bridging Gazebo simulations with real-world deployment.
- Refined neural network architectures using TensorFlow, reducing critic loss by 25%, enhancing model stability and learning ability.

Guidance, Navigation, and Controls (GNC) Researcher — Sep 2023 - May 2024
Connected Autonomous Safe Technologies (CAST) Laboratory — *College Station, TX*

- Developed Kalman filter-based countermeasures for GPS spoofing attacks, reducing localization errors to less than 3% under spoofed conditions.
- Authored undergraduate thesis on resilient fusion for localization under GPS spoofing attacks, published in IEEE Cyber Security and Resilience (CSR) Conference.

Team Lead — Aug 2023 - Jun 2024
General Motors-SAE AutoDrive Challenge™ II — *Ann Arbor, MI*

- Led 6-person team in path planning and ADAS optimization, securing 2nd place in international competition.
- Augmented Pure-Pursuit lateral control algorithms, enhancing vehicle stability and reducing path error by 70%.

Fellow for UTSR Gas Turbine Industrial Program — May 2023 - Aug 2023
Southwest Research Institute — *San Antonio, TX*

- Redesigned microturbine for UAV propulsion, achieving 98.9% accuracy in predictive CFD analysis alignment with physical testing.
- Presented findings at industry conference (200+ attendees), providing recommendations for combustion pressure distribution and fuel system optimization.

PROJECTS & OPEN SOURCE

University of Michigan Mcity Data Engine — Sep 2024 - Present

- Implemented SAM2 semantic segmentation and HuggingFace depth models into Mcity's open-source data pipeline.

US Army Moving Object Trajectory Estimation (MOTE) — May 2024 - Sep 2024

- Engineered Dead-Reckoning navigation system for off-road AVs, reducing yaw error from 180° to 2-8° (97% reduction).
- Implemented real-time kinematics-based trajectory corrections to improve motion accuracy in changing environments.

Stanley Controller Implementation for AutoDrive Competition [link] — Jan 2024 - May 2024

- Constructed and tuned Stanley-based lateral controller for AV competition, improving trajectory adherence by 71%.
- Enhanced stability in high-speed maneuvers, reduced lateral errors by 30%, and improved straight-line tracking by 70% compared to previous controller.

PUBLICATIONS

Using Sensor-Health-Aware Resilient Fusion for Localization in the Presence of GPS Spoofing Attacks, IEEE International Conference on Cyber Security and Resilience (CSR), London, UK, 2024. [link]

PROFESSIONAL SKILLS

- **Programming Languages:** Python, C/C++, Java, Shell, SQL/SQLite
- **Developer Tools & Frameworks:** Git, Docker, ROS1/ROS2, Linux, OpenCV, TensorFlow, PyTorch, Voxel51
- **Simulation/Design:** Gazebo, RViz, CARLA, LabVIEW, MATLAB/Simulink, SolidWorks, ANSYS, AutoCAD