MAXIME ZAND

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EDUCATION

M.S. in Robotics and Autonomous Systems, Arizona State University — Expected Dec. 2025
GPA: 4.0/4.0
Relevant course work: Computer Control Systems, Advanced System Modeling & Dynamics & Control, Modeling and Control of Robots, Perception in Robotics, Reinforcement Learning in Robotics, Multi-Robot Systems

B.S. in Mechanical Engineering, Arizona State University — 2020 - 2023
Relevant course work: System Dynamics and Controls (I&II), Applied Machine Learning, Circuits, Advanced Numerical Methods, Mechanical Engineering Design, Statistics, Finite Element Methods

SKILLS

Software	Python, MATLAB, C++, C, Git, Linux, ROS, Simulink, Docker, PyTorch, JAX, MuJoCo
Controls	PID, LQR, MPC, RL, Kalman Filtering, State Estimation, Motion Planning, Optimization
Embedded	Debugging, Arduino, Raspberry Pi, Encoders, SPI, I2C, UART, Mechatronics
Mechanical	Kinematics, Dynamics, Solidworks, 3D Printing, Rapid Prototyping, Finite Element Methods

EXPERIENCE

R&D Control Systems Engineer Co-op — Jan 2025 - Present
SharkNinja — *Needham, MA*

- Developing Python and C-based control systems software and documentation for 9 products across Ninja Motorized, Heated, and Coffee products.
- Prototyping and iterating new control algorithms on real hardware using serial communication and debugging tools, including a safety-critical gas valve sensor to improve safety, cost, and clarity.
- Designed and developed a data-driven model to predict thermal state of water, increasing preheat speed by 95% compared to legacy products
- Partner with cross-functional hardware and software engineering teams to design and deploy scalable, real-time embedded control systems.
- Design original algorithms and coordinate with the leadership to begin the patent submission process.

Research Aide — Jan 2024 - Jan 2025
Battery Electric & Intelligent Vehicle Lab, Arizona State University — *Tempe, AZ*

- Developing a simulation platform using Python, C++, and the CARLA Simulator to control 4 actuators, replicating CARLA simulations on a real driving rig to evaluate human interaction with autonomous driving algorithms.
- Contributed to the development of the CARLA simulation interface for multi-agent reinforcement learning research using Python.

PROJECTS

Robotics Control Simulation Developed a MATLAB App using App Designer to simulate N DOF manipulator dynamics, trajectory input, and control responses. Led a team of 5 to implement impedance and compliance control using inverse and forward dynamics, with a GUI for real time analysis bridging control and motion planning.

Reinforcement Learning Control of Holonomic Drive Developed a MuJoCo simulation of an inverted spherical pendulum on a holonomic robot, independently modeling the system and reward function with Gymnasium. Trained with soft-actor-critical and proximal policy optimization.

Distilling Symbols from Perceptual World Models Investigated the emergence of symbolic structure in latent spaces of predictive world models by analyzing and modifying Dreamer-based architectures. Proposed sparse autoencoders and mutual information-based objectives to distill interpretable symbols from black-box representations for improved model understanding and interpretability.