Minh Nguyen

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Research Objective

I am a first-year PhD student in the UT Austin ASE department, advised by Professor Efstathios Bakolas, working on optimization and dynamic game theory. My research focuses on applying optimization and machine learning methods to enable the safe, reliable, and scalable operation of complex robotic systems.

Education

The University of Texas at Austin — Austin, TX
Aerospace Engineering PhD — *August 2026 – Present*

University of California, Berkeley — Berkeley, CA
Electrical Engineering and Computer Science MS, GPA: 3.9 — *August 2024 – May 2026*
Computer Science BS, GPA: 3.9 — *August 2020 – May 2024*

Publications

M. Nguyen, J. Li, et al., "Inverse Safety Filtering: Inferring Constraints from Safety Filters for Decentralized Coordination," arXiv:2604.02687, 2026.

W. Chen, **M. Nguyen**, et al., "Decentralized Navigation of a Cable-Towed Load using Quadrupedal Robot Team via MARL," arXiv:2503.18221, 2025.

V. Lee, **M. Nguyen**, et al., "Chip Placement with Diffusion Models," *ICML*, 2025.

M. Nguyen, M. Suntup, et al., "Trajectory Optimization Methods for Energy Efficient Gait Transitions on Multi-Modal Robots," *IEEE Aerospace Conference*, 2024.

Experience

Apple — Santa Clara, CA
Graduate Intern — *January 2026 – August 2026*

- Developed machine learning tools to accelerate chip physical design
  - Trained and utilized flow-matching models for macro and standard cell placement
  - Trained and tested classical machine learning models for validating designs

SLICE Lab — Berkeley, CA
Graduate Researcher — *September 2023 – December 2025*

- Accelerating robotic control algorithms with hardware-software co-optimization
  - Designed and validated Linear Quadratic Regulator and Model Predictive Control hardware accelerators post-silicon
  - Contributed architectural changes to the Berkeley systolic array generator for increased utilization in robotic workloads
  - Used High Level Synthesis tools to transform robotics C++ code to FPGA & ASIC high performance implementations
- Applied machine learning and diffusion models to perform fast and performant macro placement

- Developed decentralized and safe robotic systems using reinforcement learning and game theoretic techniques

Hybrid Robotics Lab Berkeley, CA
Undergraduate Researcher *August 2022 – December 2024*

- Developed Multi-Agent Reinforcement Learning (MARL) algorithms to enable quadruped robot teams to complete cooperative tasks
  - Applied MARL to teach a team of quadrupeds to tow a box around obstacles
  - Utilized scalable algorithms and ran experiments with real robots in a motion tracking room

NASA Jet Propulsion Laboratory Pasadena, CA
Robotics Intern *January 2023 – August 2023*

- Research and development of an active suspension lunar rover
  - Designed and built two power distribution boards for powering a rover prototype
  - Set up simulation pipeline to test control algorithms
- Designed and implemented trajectory optimization controllers using nonlinear optimization solvers

Teaching Experience

EECS151, Introduction to Digital Design and Integrated Circuits Berkeley, CA
Graduate Student Instructor *August 2024 – December 2025*

- Head TA for ASIC lab content which teaches students Verilog and basic VLSI tools for chip design

Skills

Robotics and Control Theory

- Proficient in C, C++, Julia, and Python
- ROS, Robotic Control, Digital Signal Processing, Multi-Agent Systems, Machine Learning, Reinforcement Learning, and Game Theory

Electrical Engineering and Computer Architecture

- ASIC Design, VLSI, FPGA Design, PCB Design, PCB Fabrication, High Level Synthesis, Hardware Acceleration, and Power Distribution Systems