

Xianmai (Chris) Liang

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EDUCATION

Tufts University

Medford, MA | Expected May 2027

Master of Science in Computer Science

- **Relevant Coursework:** Reinforcement Learning, Computer Vision, Generative AI, Bayesian Deep Learning, Probabilistic Robotics, Robotics, Digital Control Systems, Feedback Control Systems, Numerical Methods

Brandeis University

Waltham, MA | May 2024

Bachelor of Science in Computer Science, Magna Cum Laude

- **Student Athlete:** NCAA Varsity Baseball

RESEARCH EXPERIENCE

SPARC Lab, Tufts University

Jan 2026 – Present

Safe + Performant Autonomous Robotics and Control

Advisor: Prof. Ryan Cosner

- Designing learned Control Barrier Function (CBF) approaches that navigate the safety-performance tradeoff, adaptively modulating nominal controllers to remain robust under disturbances and distribution shift.
- Architected and trained policy distillation pipelines to produce adaptive safety parameters that adjust online to operating conditions, bridging data-driven adaptability with formal control-theoretic guarantees.

MULIP Lab, Tufts University

Aug 2025 – Jan 2026

Multi-Modal Learning, Interaction, and Perception

Advisor: Prof. Jivko Sinapov

- Built and executed multi-modal tactile data collection protocols on a UR5 manipulator across a range of tool-use actions, producing trial datasets for downstream reinforcement learning research.
- Investigated transfer learning for tactile perception, developing pipeline components for data preprocessing and representation analysis, and maintaining lab infrastructure and onboarding pipelines.

PROFESSIONAL EXPERIENCE

Wealth.com | Software Engineer | Tempe, AZ

Jan 2025 – Jul 2025

- Built internal developer tooling on AWS SAM to streamline Lambda and GraphQL testing, accelerating local iteration for the engineering team.
- Hardened production security across CI and AWS services by integrating Semgrep and Datadog, authoring custom static-analysis rules to detect vulnerabilities, strengthen observability, and safeguard a platform handling sensitive estate and financial documents.

HealthFlexx | Applied Scientist Intern | Indianapolis, IN

Jun 2023 – Aug 2023

- Prototyped an LLM-based assistant for elderly users of a medical device, building a retrieval-augmented generation pipeline to ground responses in device-specific medical context.
- Designed memory and session management components to support continuity and personalization across multi-turn interactions.

PROJECTS

Twist-RL: Reinforcement Learning for Helical Manipulation

Fall 2025

- Extended force-based manipulation learning to helical articulation, training a robot-agnostic policy that transfers across platforms by learning in object force-space rather than joint configuration space.
- Built and trained an actor-critic RL pipeline in simulation, designing the task formulation and reward structure to produce stable unscrewing behavior on a Franka arm.

Probabilistic Trajectory Reconstruction from Keyframes

Spring 2025

- Developed probabilistic models for reconstructing high-frequency robot trajectories from sparse keyframes on a real-world manipulator dataset.
- Explored both classical and deep approaches, implementing Gaussian Process baselines alongside a variational autoencoder upgrade for sparse-observation trajectory inference.

TECHNICAL SKILLS

Languages: Python, C++, Java, TypeScript

ML & Robotics: PyTorch, JAX, NumPy, CVXPY, MuJoCo, Isaac Lab, OpenCV, LangChain

Engineering: React, Node.js, GraphQL, AWS, Docker, Git