Sep Nasiriany

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Education

Bachelor of Science, Computer Science
University of California, Santa Cruz

Oct 2020 - Dec 2024

Experience

The University of Texas at Austin
Robot Perception and Learning Lab (RPL) Visiting Researcher

Jan 2025 - Present

- Co-led RoboCasa365, a large-scale robotic simulation benchmark featuring 365 diverse household manipulation tasks spread across 2,500 procedurally varied kitchen environments.
- Designed and implemented rich, realistic task scenarios using a structured task-generation pipeline, enabling evaluation of generalist robot policies under large variations in objects, layouts, and scene styles.
- Designed and implemented new evaluation metrics for generalist manipulation policies, enabling more accurate measurement of cross-task generalization, robustness, and sim-real transfer quality.
- Supported experiments on pretraining, finetuning, and lifelong learning for state-of-the-art robot manipulation models (e.g., Diffusion Policy, pi0/pi0.5, GR00T), contributing to large-scale benchmarking of generalist robot learning.
- Coordinated with Lightwheel Lab on asset generation and dataset production, providing weekly technical review and quality control to ensure deliverables met benchmark and research standards.
- Conducted real-world robot experiments and built the full GR00T and co-training model pipeline, including a custom VLA-mapping script, low-latency GR00T inference setup, and real-robot stack for integrating simulation and real-robot demonstrations to train and evaluate generalist robot policies.
- ⭐ 1K+ GitHub stars

University of California, Santa Cruz
Baskin Engineering Tutor

Apr 2024 - Dec 2024

I helped students enrolled in CSE13s (Computer Systems and C Programming) understand essential C programming skills such as memory management, algorithm design, data types, debugging, and program development.

Publications

RoboCasa365: A Large-Scale Simulation Framework for Training and Benchmarking Generalist Robots | *September 2025*
Soroush Nasiriany*, Sepehr Nasiriany*, Abhiram Maddukuri*, Yuke Zhu
Accepted to International Conference on Learning Representations (ICLR) 2026

Projects

Optical Image Recognition (OCR)
- Leveraged multimodal AI with a vision-language model (Llava-1.5-7B) for text and mathematical symbol recognition, utilizing transformer-based architecture for sequence generation.
- Implemented image preprocessing techniques to enhance character recognition accuracy.
- Utilized prompt engineering and fine-tuned the model for improved performance in complex equation interpretation.
- Integrated the OCR system with dataset handling and automated evaluation for efficient validation.

Multithreaded HTTP Server
- Optimized server efficiency with a thread-pool model, improving throughput while maintaining request coherency and avoiding unnecessary blocking.
- Developed a thread-safe queue and synchronization mechanisms using mutexes and condition variables to ensure efficient request processing and correctness.
- Implemented an audit logging system that maintains a linearizable order of client requests, ensuring atomicity and durability of log entries.

RSA Encryption
- Implemented a public-key cryptography system using the Schmidt-Samoa (SS) algorithm, incorporating key generation, encryption, and decryption functionalities.
- Developed number-theoretic functions, including modular exponentiation, primality testing, and modular inverses, ensuring secure key pair generation.
- Utilized the GNU Multiple Precision Arithmetic (GMP) library to handle large integer computations necessary for secure cryptographic operations.

Skills

Programming languages: Python, C, C++, Java, Assembly, Haskell

Machine Learning & Robot Learning: Deep Learning, Reinforcement Learning, Vision-Language-Action (VLA) models, Diffusion policy / Diffusion models, Model fine-tuning, Dataset generation & curation, Custom dataloaders, Experiment design & ablation studies

Robotics & Control: Real-world robot manipulation, Robot perception, Sim-to-real transfer, Teleoperation, Robot calibration / environment setup

Research Interests: Reinforcement learning, Sim-to-real transfer, Generalist robotic policies, Multimodal policy learning