

YUVAN SHARMA

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EDUCATION

California Institute of Technology
Ph.D. Computing and Mathematical Sciences

Pasadena, CA
Sep 2026 – Present

University of California, Berkeley
B.A. Astrophysics, B.A. Computer Science
GPA: 3.91

Berkeley, CA
Aug 2022 – Dec 2025

Relevant Coursework: Robotic Manipulation & Interaction; Probability & Random Processes; Quantum Mechanics; Efficient Algorithms & Intractable Problems; Designing Information Devices & Systems; Planetary Astrophysics

RESEARCH INTERESTS

Dexterous manipulation, learning from large-scale human data, tactile sensing, contact dynamics, and physics-based structure for generalizable robotic intelligence.

PUBLICATIONS

1. Dantong Niu*, Zhuoyang Liu*, Zekai Wang*, Boning Shao, Zhao-Heng Yin, Anirudh Pai, **Yuvan Sharma**, et al.
T-Rex: Tactile-Reactive Dexterous Manipulation. [arXiv:2606.17055](#), *CoRL 2026*.
Description: T-Rex pairs a 100-hour tactile-synchronized manipulation dataset built around elementary motor primitives with a variable-rate Mixture-of-Transformers policy that couples slow visuomotor action denoising with fast tactile refinement for contact-rich tasks.
Contribution: Developed the tactile VQ-VAE encoder; designed and iterated on experiments; built out the real-world robot stack used for evaluation.
2. **Yuvan Sharma***, Dantong Niu*, Anirudh Pai*, Zekai Wang, Zhuoyang Liu, Baifeng Shi, Stefano Saravalle, Boning Shao, Ruijie Zheng, Jing Wang, K. Kallidromitis, Yusuke Kato, Fabio Galasso, Yuke Zhu, Danfei Xu, Linxi “Jim” Fan, Jitendra Malik, Trevor Darrell, Roei Herzig.
Contrastive Action-Image Pre-training for Visuomotor Control. [arXiv:2606.17256](#), *preprint*.
Description: CAIP is a vision encoder that learns a joint action-image representation by treating 3D hand keypoints from egocentric human video as a proxy for end-effector actions, transferring directly to dexterous visuomotor control.
Contribution: Designed experiments and ablations; built the real-world robot stack used for evaluation.
3. Nan Wang, Mohit Yadav, Jonathan Wulff, Aidan Rosenbaum, Kezhou Chen, **Yuvan Sharma**, Xu Dong, Yiwei Tao.
Aero Hand Open: A Simulation-Ready Tendon-Driven Hand for Dexterous Manipulation Learning. [arXiv:2608.28578](#), *preprint*.
Description: An open-source, low-cost tendon-driven anthropomorphic hand released simulation-ready, including a simulation model of the cable transmission and an identified actuation map. Policies trained entirely in simulation transfer to hardware without fine-tuning or state estimation.
Contribution: Developed the reinforcement learning training package for the hand; contributed to the identified actuation map used for sim-to-real transfer.
4. Dantong Niu*, **Yuvan Sharma***, Baifeng Shi*, Rachel Ding, Matteo Gioia, Haoru Xue, Henry Tsai, K. Kallidromitis, Anirudh Pai, Shankar Sastry, Trevor Darrell, Jitendra Malik, Roei Herzig.
Learning to Grasp Anything by Playing with Random Toys. [arXiv:2510.12866](#), *ICLR 2026*.
Description: We show it is possible to achieve zero-shot generalization in robotic grasping by training on randomized toy objects and achieving strong performance on real-world objects. This generalization is made possible by a novel object-centric visual representation.
Contribution: Finalized model architecture and approach through small-scale studies; led experiments across Franka and H1-2 humanoid robots; conducted ablations shaping the project’s direction, and mentored junior project members.

5. Dantong Niu*, **Yuvan Sharma***, Haoru Xue, Giscard Biamby, Junyi Zhang, Ziteng Ji, Trevor Darrell, Roei Herzig. *Pre-training Auto-regressive Robotic Models with 4D Representations*. [arXiv:2502.13142](#), *ICML 2025*.

Description: ARM4R is an Autoregressive Robotic Model that leverages low-level 4D Representations learned from human video data. This results in a stronger robotic model with better spatial and temporal understandings.

Contribution: Designed the 4D representation; developed model training and evaluation pipelines; conducted large-scale experiments, and implemented robot control and data collection systems for the Kinova arm.

Presented: Poster presentation at *ICML 2025*, Vancouver, Canada.

6. Yida Yin*, Zekai Wang*, **Yuvan Sharma**, Dantong Niu, Trevor Darrell, Roei Herzig. *In-Context Learning Enables Robot Action Prediction in LLMs*. [arXiv:2410.12782](#), *IEEE ICRA 2025*. (Also filed as patent.)

Description: We introduce RoboPrompt, a framework that enables off-the-shelf text-only LLMs to directly predict robot actions through in-context learning (ICL) without training.

Contribution: Implemented the real-robot control codebase used for all experiments, including integration with the depth camera and calibration routines.

7. Dantong Niu*, **Yuvan Sharma***, Giscard Biamby, Jerome Quenum, Yutong Bai, Baifeng Shi, Trevor Darrell, Roei Herzig. *LLARVA: Vision-Action Instruction Tuning Enhances Robot Learning*. [arXiv:2406.11815](#), *CoRL 2024*. (Also filed as patent.)

Description: LLARVA is one of the first vision-language-action (VLA) models. It is trained with a novel instruction tuning method that leverages structured prompts and an auxiliary vision task to unify a range of robotic learning tasks, scenarios, and environments.

Contribution: Co-led data collection and fine-tuning of multimodal policies; developed auxiliary visual-trace tasks that improved joint vision-action understanding and downstream performance.

Presented: Poster presentation at *CoRL 2024*, Munich, Germany.

RESEARCH EXPERIENCE

Research Intern, NVIDIA GEAR

May 2026 – Present

Advisors: Jim Fan, Yuke Zhu

- Research on large-scale robot foundation models for dexterous manipulation.
- Building egocentric human video data pipelines for large-scale robot pre-training.
- Developing tactile sensing and its integration into manipulation policies.

Robotics Researcher, Berkeley Artificial Intelligence Research (BAIR) Oct 2023 – May 2026

Advisors: Trevor Darrell (primary), Jitendra Malik, Shankar Sastry

- Research on generalizable representations and multimodal learning for robotic manipulation.
- Worked with single-arm, bimanual, and humanoid robot setups for large-scale imitation learning and reinforcement learning experiments.
- Contributed to CoRL, ICRA, ICML, and ICLR publications, and represented the lab at CoRL and ICML as an undergraduate presenter.

TEACHING EXPERIENCE

Teaching Assistant, EECS 106A: Introduction to Robotics

Aug 2025 – Dec 2025

University of California, Berkeley

- Contributed to course content under Professors Roberto Horowitz and Jean-Paul Tennant.
- Led weekly discussion sections and office hours for 200+ students, covering topics such as forward/inverse kinematics, velocities, Jacobians, and dynamics.
- Assisted with assignment design, grading, and debugging student code using ROS2 and Python.

Research Engineer, EECS 106B: Robotic Manipulation and Interaction Jan 2026 – May 2026
University of California, Berkeley

- Contributed to course content under Professor Giuseppe Loianno.
- Developed class projects involving dexterous grasping and manipulation.
- Supported course infrastructure through grading and assignment development.

Academic Intern, CS 61A & CS 70 Jan 2023 – Aug 2023
University of California, Berkeley

- Supported lab sessions and office hours for introductory computer science and discrete mathematics courses.
- Assisted students with theoretical topics—including recursion, logic, and probability—as well as practical Python programming.

INDUSTRY EXPERIENCE

Robotics Software Engineer Intern, TetherIA Jul 2025 – Oct 2025
Santa Clara, CA

- Implemented deep reinforcement learning algorithms for dexterous manipulation.
- Engineered sim-to-real transfer pipelines in MuJoCo and IsaacSim.
- Built a vision-based joint angle estimation system to enable more accurate simulation parameter estimation.

AI Developer Intern, CompeteIQ Jun 2023 – Nov 2023
Remote

- Built GPT-based data retrieval and graph reasoning tools for business intelligence applications.

Payload Team Member, Space Tech. and Rocketry (STAR) Sep 2022 – Aug 2023
UC Berkeley

- Worked on STAR's competition rocket for IREC (Intercollegiate Rocket Engineering Competition) 2023, focusing on camera and parachute payload CAD designs and drag force simulations for optimization.

PROJECTS

Goal-Conditioned Grasping for Robot Hands Apr – May 2025

[Project Report](#)

Used kinematic retargeting and reinforcement learning to train an Allegro hand for goal-conditioned grasping in Isaac Gym.

Gaussian Splatting for Robotic Manipulation Nov – Dec 2024

[Project Page](#)

Built 3D tabletop reconstructions using static Gaussian splats for downstream object grasping.

3D Printed Rocket Camera Sleeve Sep 2022 – Apr 2023

[GitHub](#)

Designed and manufactured a lightweight camera sleeve for STAR's IREC competition rocket to record flight data.

AWARDS AND HONORS

NSF Graduate Research Fellowship (GRFP) 2026
Dean's Honor List, University of California, Berkeley Fall 2023, Fall 2024

VOLUNTEERING

Student Election Volunteer, Santa Clara County Registrar of Voters Sep 2021

- Assisted voters during California's Gubernatorial Recall Election.
- Guided community members through the ballot-casting procedure.
- Ensured compliance with COVID-19 safety protocols.

SKILLS

Programming:	Python, PyTorch, C++, Java, ROS/ROS2, MuJoCo, IsaacSim, IDL
Additional:	JAX, SQL, Blender, SolidWorks, Web Design
Languages:	English, Hindi