

DARIN DJAPRI

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EDUCATION

UNIVERSITY OF CALIFORNIA – SAN DIEGO

Bachelor of Science in Computer Science

Major in Computer Science | GPA: 3.957

Relevant Coursework: Machine Learning for Robotics, ML with Few Labels, Deep Reinforcement Learning, Deep Learning, Machine Learning, Optimization for Data Science, Computer Vision, Advanced Data Structures, Design and Analysis of Algorithms, Operating Systems Principles

San Diego, CA

Expected June 2026

DE ANZA COLLEGE

Associate's Degree in Computer Science

Major in Computer Science | GPA: 3.86

Cupertino, CA

June 2024

PUBLICATIONS / PREPRINTS

Cross-Embodied Co-Design for Dexterous Hands

Submitted to International Conference on Learning Representations (**ICLR**) 2026. Under review. [arXiv](#).

Fay, K., Djapri, D. A., Zorin, A., Yi, S., Clinton, J., El Lahib, A., Tolley, M. T., Su, H., & Wang, X.

SELECTED AWARDS

EMPOWER Scholar (NSF and UCSD Sponsored Program)

RESEARCH INTERESTS

Embodied AI and robot learning for dexterous manipulation and real-world generalization across tasks, environments, and morphologies, including VLA-style models using simulated, real, and video data.

RESEARCH EXPERIENCE

HAO SU LAB

University of California, San Diego

June 2025 – Present

Undergraduate Researcher

- Developed a **cross-embodied co-design framework** for dexterous robot hands that jointly optimizes morphology and control policies for in-hand rotation, grasping, and flipping.
- Built a **parametric hand generator pipeline** that procedurally constructs robot hands with varying finger counts, finger lengths, joint counts, fingertip types, and palm layouts, going from mesh → convex decomposition → MuJoCo XML → URDF/USD for GPU-parallelized RL training, resulting in over 10000 generated hands for evaluation.
- Designed **cross-embodied training environments** in Isaac Lab and policy verification environments in MuJoCo, and trained morphology-conditioned PPO (with RNN backbone) using action masking and adaptive domain randomization to share a single policy across diverse hand designs.
- Engineered the **sim-to-real deployment stack**: wired and tuned motors, selected joint drive gains in sim to match real movement, and wrote Python control code that maps normalized policy actions to motor commands of generated hands
- Implemented a **graph-heuristic search (GHS)** algorithm with a GNN value function to rank partial and complete hand designs using cross-embodied policy evaluation.
- Achieved **~400× faster design evaluation** than training separate PPO policies per morphology and discovered 3-finger designs that outperform anthropomorphic baselines in both simulation and real-world in-hand rotation tests.
- **Second-author**, “*Cross-Embodied Design for Dexterous Hands*” – submitted to ICLR 2026 (under review).

ROSE LAB

University of California, San Diego

Sep 2024 – June 2025

Undergraduate Researcher (Early Research Scholars Program)

- Reimplemented and extended a **neural surrogate model (TGLF-NN)** in PyTorch for fast approximation of nonlinear plasma turbulence models used in fusion research.
- **Optimized the training pipeline** (normalization, asinh squashing, loss metrics such as MSE/MSRE, and hyperparameters) to achieve test MSE ≈ 0.03 on a $\sim 670k$ -point dataset of TGLF simulations.
- Designed and implemented a **Bayesian Active Learning (BAL)** framework using Expected Information Gain (EIG) acquisition around TGLF-NN, showing that EIG can match full-data accuracy using only $\sim 35\%$ of the training data.
- Engineered the experiment infrastructure on the **Nautilus GPU cluster** using **Docker and Kubernetes**, logged experiments and ablations with **Weights & Biases**, and stored models/results on **S3** for reproducibility.
- Presented our BAL + TGLF-NN results at the UCSD Undergraduate Engineering Research Symposium.

PROJECTS

TRITON HUMANOID

July 2025 - Present

- Modelled UCSD's first scratch-built humanoid from mechanical CAD into a physics simulator, defining link inertias, joint limits, and contact properties to create a control-ready simulation model.
- Designed environments for and trained **disturbance-rejection** and **velocity-tracking locomotion** policies using PPO with adaptive domain randomization and privileged observations, after extensive reward tuning to obtain stable, natural locomotion.
- Distilled the privileged teacher policy into a student policy that uses only onboard observations on the real system (IMU, joint encoders, camera-derived signals) to prepare for sim-to-real deployment.
- Exported policies with PyTorch (JIT) compilation and integrated them into a **ROS2** control stack, writing nodes for IMU streaming, Intel RealSense depth camera input, and motor actuation.
- Preparing real-world deployment of the disturbance-rejection and locomotion policies on the physical Triton Humanoid, scheduled for December 13, 2025.

ROBOTIC ARM MANIPULATION

Mar 2025 - May 2025

- 3D-printed and assembled the ARCTOS 6-DoF robot arm and modelled the MJCF for simulation in MuJoCo
- Implemented an inverse kinematics controller and scripted a task-space expert in MuJoCo to generate cube-grasp trajectories, collecting demonstration rollouts.
- Developed an imitation learning pipeline (behaviour cloning + DAgger) in PyTorch that outputs end-effector deltas on top of the IK controller and transferred the policy to the real arm by mapping these deltas to joint commands with workspace and step-size safety constraints.

DQN 2015 PAPER REIMPLEMENTATION

Mar 2025

- Implemented the DQN algorithm, using a neural network as the Q-Value approximator to handle high dimensional state spaces
- Incorporated preprocessing such as frame stacking, image flicker artifact removal, and grayscale filtering to improve approximation
- Created the replay buffer mechanism with memory management considerations for GPU training
- Trained multiple agents for various games achieving human-level performance in Breakout and Carnival

ORGANIZATIONS

TRITON DROIDS

University of California, San Diego

Sep 2024 – Present

Vice President of Engineering

- Led the engineering effort to design and build UCSD's first humanoid robot and a quadruped prototype, coordinating across mechanical, electrical, and software teams (~60+ members).
- Led efforts to secure over \$5,000 in sponsorship from HEIDENHAIN, Ansys, and Onshape to fund hardware, machining, and electronics for the humanoid and quadruped platforms.
- Designed and led reinforcement learning workshops (MDPs, policy gradients, deep RL) and mentored ~15 students in building Triton Pupper, a quadruped robot controlled by learned policies.

TEACHING

AYC LOGIC

Los Angeles, CA

Coding Tutor

Jun 2023 – Present

- Managed diverse coding projects from command line applications to games in PyCharm, IntelliJ, and Android Studio
- Taught Python and Java for students aged 7-50, covering topics ranging from functional and object-oriented programming to game development with PyGame, USACO competitive programming, and Machine Learning basics.
- Utilized PyCharm for version control to impart industry-standard coding practices, preparing students for real-world software development environments through understandable, maintainable, and well-documented code

DE ANZA STUDENT SUCCESS CENTER

Cupertino, CA

Math/Physics Tutor

Sep 2023 – July 2024

- Tutored community college students in Calculus, Differential Equations, Discrete Math, Linear Algebra, and Physics (Mechanics, E&M), translating theory into practical problem-solving strategies.
- Led 3+ one-on-one sessions per week per subject each term, helping students raise grades from Cs to As through tailored support and improved study methods, including several who later transferred to UC Berkeley.

TECHNOLOGIES

Languages: Python (primary), C/C++, Java, TypeScript/JavaScript, R, MATLAB, SQL, HTML/CSS, LaTeX, x86

ML / DL: PyTorch, NumPy, scikit-learn, Keras, OpenCV, Pandas, Matplotlib

Robotics & Simulation: Isaac Lab / Isaac Sim, MuJoCo, ManiSkill2, ROS 2, Gazebo, Raspberry Pi, Arduino

Tools: Git, Docker, Kubernetes, Linux/Unix

Concepts: Reinforcement Learning (PPO, DQN, imitation learning), Sim2Real, Supervised/Unsupervised ML, Computer Vision