Shamak Gowda

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Education

University of California, Berkeley *Expected Graduation: Spring 2028*

Bachelor of Science in Electrical Engineering and Computer Science GPA: 4.00/4.00

- **Societies**: Regents' and Chancellor's Scholar (merit scholarship offered to top 0.1% applicants), Eta Kappa Nu (HKN), Institute of Electrical & Electronics Engineers (IEEE), Dean's List (top 10% in Engineering), Model United Nations
- **Courses**: Data Structures & Algorithms, Robotics, Machine Learning, Machine Structures (C, RISC-V), Discrete Mathematics and Probability Theory, Intro to CS (Python, SQL), Linear Algebra, Signals & Systems, Circuits

Experience

Berkeley Artificial Intelligence Research (BAIR) Laboratory

Researcher, AUTOLab for Robotics and Automation Sciences (Prof. Ken Goldberg) Jan. 2026 – Present

- Build robotics software spanning robot learning (VLAs, dynamics models), perception, motion planning, and closed-loop control across industry-sponsored research projects (Nvidia, Bosch, Samsung), from simulation to robot deployment;
- Fine-tuned autonomous-driving VLAs (SFT) to achieve 80% improved success rate on custom CARLA dynamic-obstacle parking testbed; implemented hybrid A* search and Kalman-filtering for ground-truth PDM trajectory data collection.
- Optimized agentic robotics for real-world industrial tasks via LLM-compatible robotics skills and motion-planning & perception suites; leveraged prompt-engineered agentic workflow (SKILL.md-defined skills, agents, coordinators) to design a Graph-as-Policy architecture for a novel bimanual handover task in a custom MuJoCo sim environment
- Developed dynamics models to map robot actions in sim (Newton) to real-world hose deformations (Samsung Research)

CTRL Robotics *(startup)* Jan. 2026 – May 2026

ROS Developer Intern

- Configured a control client for a mobile robot platform using ROS2 (Iron), Open-RMF & MQTT to bridge incoming telemetry with multi-floor hospital infrastructure; validated message flows (Postman) and action states (MongoDB)
- Engineered a multi-threaded Python simulator to mock real-time MQTT sensor statuses and queuing behaviors; eliminated hardware dependencies by deploying Docker and Multipass (Ubuntu) environments for 30% reduced test time.

Auriga Space Jan. 2026 – Present

Electronics Engineer Contractor

- Designed and assembled a modular, 4-layer 2500g-rated satellite PCB featuring an STM32, solar-charging circuitry, and power regulation; implemented proper decoupling and feedback loop to guarantee stable 3.3V rails (95% peak efficiency).
- Handled hardware interfacing for IMU and GPS; configured serial protocols (SPI, I2C, UART) to optimize throughput
- Presented weekly with upper management, conducted design reviews, and delivered professional documentation

FoodWare *(startup)* Sep. 2024 – Apr. 2025

Front-end Developer Intern

- Developed a user-facing platform via React, Tailwind for a sustainability startup, displaying real-time reuse metrics that maximized platform efficiency by 2x. Utilized Axios to orchestrate asynchronous HTTP requests from AWS cloud API.
- Engineered secure iOS mobile checkout workflows by integrating the Stripe SDK; top 2 contributor on 0.7.0 release
- Built end-to-end wildfire prediction system with satellite imagery and LSTM models (88% accuracy). Designed RESTful API to perform CRUD operations to serve +1 million potential users & dynamic visualizations for long-term monitoring

MIT Lincoln Laboratory Jul. 2024 – Aug. 2024

Research Intern

- Architected an autonomous path-planning state space using ROS2; tuned and implemented closed-loop heading ($\pm 2^\circ$ accuracy) and depth PID controllers and developed maneuver strategies validated via Gazebo simulation
- Trained and optimized a YOLOv8 object detection model achieving 90% accuracy to track competing vehicles; deployed the computer vision pipeline onto a resource-constrained Raspberry Pi, managing edge inference constraints at 5 FPS.

Publications

IROS 2026: Shivakumar, N., Ransing, E., Zhang, J., **Gowda, S.**, Yang, K., Hua, M., Agrawal, A., Yu, J., & Goldberg, K. (2026). TRACE: Interactive Bi-Directional Tracing of Monochrome Cables Amid Clutter. *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).*

ISMIR 2026: Gupta, A., Park, H. J., Guzman, A., **Gowda, S.**, Konduri, S., Lian, J., Netzorg, R., & Anumanchipalli, G. (2026). TART: A Modular Tool for Technique-Aware Audio-to-Tablature Guitar Transcription. *International Society for Music Information Retrieval Conference (ISMIR).*

Projects

Alloy Crack Susceptibility Prediction | *Python, TensorFlow, Data Structures* June 2023 – Aug. 2023

- Built a multi-model ML ensemble pipeline to predict solidification cracking susceptibility (SCS) in high-temperature aerospace alloys directly from elemental formula inputs. Achieved Pearson R of 0.75, minimizing variance over baselines

Technical Skills

Languages: Java (Structures), Python, C/C++, RISC-V, SQL (Postgres), JavaScript, HTML/CSS, LaTeX, Bash, Dockerfile
Tools: Git, PyTorch, NumPy, Pandas, scikit-learn, TensorFlow, ROS2, React, Node.js, KiCAD, OpenCV, Docker, Microsoft