

# ABHAY SHUKLA

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## EXPERIENCE

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### FRC 604: Quixilver Robotics

June 2023 - Present

*Controls/Software Lead (10-11)*

*California*

- Develop team's competition data collection application, enhance robot capabilities and localization with computer vision and environmental sensors, contribute to team software (particle filter, time-optimal trajectory optimization software, yearly robot control architecture).
- Lead subteams in design, manufacturing, and programming of team robot while training new members to contribute to robot development.
- Contribute to community FRC tool TheBlueAlliance: global competition data aggregation and insight platform. Attend/host STEM community outreach events (20+).

### CA State Summer School for Mathematics & Science, UCLA

July 2024 - August 2024

*Brain-Inspired Computing Cohort Student*

*California*

- Investigated parallels of biological mechanisms to machine learning advancements (transformers, regression, etc).
- Developed audio generation ML architecture with UCLA funding.

### Bay Area STEM Academy

April 2023 - Present

*Cofounder*

*California*

- Developed engaging curriculums, recruited mentors, planned and effectively taught in-person and online camps encompassing diverse STEM fields.
- Impacted 500+ students and raised \$4800+ to support organization costs, local STEM outreach initiatives, and Indian children healthcare foundation.

## PROJECTS

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### StereoSampleGAN

*GitHub Repo: <https://github.com/shuklabhay/stereo-sample-gan>*

- Introduces a novel machine learning architecture to generate stereo, time-frequency representations of audio samples.
- Research project pending publishing, continuation of UCLA COSMOS 2024 Research.

### Quicksout

*GitHub Organization (Private Team Project): <https://github.com/frc604>*

- Led development of flexible application to effectively capture and visualize FRC competition data. Trained 10+ team members in web dev to build app and adapt to yearly games.
- 130+ users on FRC604, data collected for 700+ robots.

### Domotron (FRC604 2024 Robot)

*Robot Website: <https://604robotics.com/2023-2024-crescendo/>*

- Developed physics-based shot calculations, driver control automation, competitive autonomous routines. Designed climber winch mechanism and vertical elevator.
- Ranked 4/300 California teams, 12/3500 internationally. World championship division and two time California regional event winning robot.

### VelocityDraft

*Website: <https://shuklabhay.github.io/velocity-draft/>*

- Leverages user writing abilities and essay deadlines to algorithmically determine best order of essay writing. Third place project in OneHacks III Hackathon.

## EDUCATION

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### Leland High School

Junior

*Expected June 2026*

*San Jose, CA*

SKILLS

Technical Fields	AI/ML, Robotics, Signal Processing, CAD, 3D Printing, Webdev/Appdev
Other	Digital Audio Production, Graphic Design, Video Editing

HONORS & AWARDS

• NextFlex FlexFactor: Santa Clara Regional Winner	May 2024
• NSE Level 2: Silver Distinction	May 2024
• OneHacks III Hackathon: 3rd Place Submission	August 2023