

ABHAY SHUKLA

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EXPERIENCE

FRC 604: Quixilver Robotics

June 2023 - Present

Controls/Software Lead (10-11)

California

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

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, managed logistical aspects, recruited mentors, and effectively taught multiple in-person and online camps encompassing diverse STEM fields.
- Impacted 500+ students and raised \$4800+ to support organization costs, local robotics team STEM outreach initiatives, and underserved Indian children healthcare foundation.

PROJECTS

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. Actively used by FRC604: 130+ users, data collected for 700+ robots.

Domotron (FRC604 2024 Robot)

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

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

VelocityDraft

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

- Leverages user writing abilities and essay deadlines to algorithmically determine best order of essay writing to maximize writing and review time and prevent overwhelming users.
- Third place project in OneHacks III Hackathon.

EDUCATION

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