ABHAY SHUKLA

abhayshuklavtr@gmail.com | https://www.linkedin.com/in/shuklabhay/ | https://github.com/shuklabhay | https://shuklabhay.github.io

EXPERIENCE

FRC 604: Quixilver Robotics — 2022 - 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 optimizer, yearly robot control architecture).
· Lead subteams in design, manufacturing, and programming of team robot while training new members to contribute to robot development. Attend/host 20+ STEM community outreach events.
· Develop progressive web app for TheBlueAlliance, a community-driven global platform for aggregating and providing real time insights for extensive FRC competition data.

UCLA COSMOS (CA Summer School for Mathematics & Science) — 2024
Brain-Inspired Computing Cohort Member — *California*

· Investigated machine learning advancements (attention, visual processing, recurrent systems, reinforcement, etc) alongside their neurological foundations.
· Developed novel audio generation ML framework with UC funding.

Bay Area STEM Academy — 2023 - Present
Cofounder — *California*

· Developed engaging curricula, recruited mentors, planned and effectively in-person and online camps encompassing diverse STEM fields.
· Impacted 700+ students and raised $6000+ to support organization costs, local STEM outreach initiatives for underrepresented communities, and children health foundations.

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 while optimizing computational efficiency.
· Partially funded by UCLA, paper pending publishing.

Quickscout
GitHub Organization: https://github.com/frc604

· Developed flexible robot performance analysis application for multimodal FRC event data collection and real-time visualization. New, comprehensive team insights drive critical strategic decisions and facilitate team's success at events.
· 130+ users on FRC604, data collected for 700+ team robots, trained 10+ team members in webdev to build app and adapt to yearly games.

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

· Developed computer vision and physics-based shot calculations, driver control automation, competitive autonomous routines.
· Designed climber winch mechanism and robot vertical elevator. Robot's advanced capabilites led to international team success in 2024.

VelocityDraft
Application Website: https://shuklabhay.github.io/velocity-draft/

· Open source webapp that analyzes user writing abilities and essay deadlines to prioritize essay writing order and improve essay quality by reducing user stress. Won third place at OneHacks III Hackathon.

EDUCATION

Leland High School — *4.00 UW A-G*
Junior — *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

• FRC604: World Championship Milstein Division Winner (12/3500 Internationally + 4/300 in CA) — 2024
• NextFlex FlexFactor: Entrepreneurship Competition Winner (1/260 in CA) — 2024
• OneHacks III Hackathon: Third Place (3/120 Internationally) — 2023
• SCU/SVUDL Invitational: PF Debate Finalist (2/140 Internationally) — 2022