ABHAY SHUKLA

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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.
· Contribute to community FRC tool TheBlueAlliance: global competition data aggregation and insight platform. Attend/host 20+ STEM community outreach events.

CA State Summer School for Mathematics & Science, UCLA   2024
Brain-Inspired Computing Cohort Member   *California*

· Investigated parallels of biological mechanisms to machine learning advancements (attention, visual processing, recurrent systems, reinforcement, etc).
· Developed audio generation ML architecture with UCLA funding.

Bay Area STEM Academy   2023 - Present
Cofounder   *California*

· Developed engaging curriculums, recruited mentors, planned and effectively taught in-person and online camps encompassing diverse STEM fields.
· Impacted 700+ students and raised $6000+ to support organization costs, local STEM outreach initiatives, child 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

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

· Developed CV and physics based shot calculations, driver control automation, competitive autonomous routines. Designed climber winch mechanism and robot vertical elevator.

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

· Open source webapp leverages user writing abilities and essay deadlines to algorithmically determine best order of essay writing. Third place project in 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 Finalist (2/140 Internationally) — 2022