

# ABHAY SHUKLA

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

## EXPERIENCE

### Stanford Center for Biomedical Informatics Research

November 2024 - Present

*Gevaert Lab Student Researcher*

*California*

- Developed multi-GPU ML/CV algorithms for microscopic and large medical imager region segmentation (supervised & unsupervised).
- Produced detailed scientific documentation to communicate research findings. All research done under the mentorship of researcher Chris Sadée.

### UCLA COSMOS (CA Summer School for Mathematics & Science)

July 2024 - August 2024

*Brain-Inspired Computing Cohort Member*

*California*

- Integrated foundational neurobiological principles into machine learning models for rat neuron behavior, image geolocation, and character recognition under the mentorship of UCLA Prof. Hugh Tad Blair.

### FRC 604: Quixilver Robotics

June 2022 - Present

*Controls/Software Lead (10)*

*California*

- Designed and implemented high-performance tele-autonomous FRC robots, integrating real-time computer vision, multi-modal sensor integration, and strategic mechanism design to boost autonomous performance and achieve a top 0.1% team ranking (12/10,000+) internationally.
- Led 15+ members in developing a real-time FRC competition data collection and visualization platform, transforming 8 years of team knowledge into informed strategic decision-making. App currently serves 175+ users who have collected data for 1000+ matches.

## PROJECTS

### StereoSampleGAN

*GitHub Repo*

- Developed a novel generative AI architecture for high-quality stereo audio generation leveraging custom-collected drum data, effective signal processing representations, and efficient training techniques
- Architecture pioneers stereo audio generation at 44.1 kHz while increasing audio quality by 85% and reducing training time by 25x (compared to DrumGAN & WaveGAN respectively).

### Vox Transformis

*Science Fair*

- Developed an AI-based framework to translate audio while preserving rhythmic, literal, and melodic creatures by utilizing multimodal LLMs, voice cloning, and a phonetically constrained DTW algorithm.

### SporeStrike

*Pitch Slide Deck*

- Engineered an affordable drone-based fungicide disposal system and 3D-printed prototypes to improve efficiency of farm fungicide disposal and prevent food waste equivalent to feeding 4 billion people. First place project at the 2024 FlexFactor Entrepreneurship Championships (1/260).

## EDUCATION

### Leland High School

Junior

4.00 UW A-G

San Jose, CA

## SKILLS

### Technical Fields

AI/ML, Robotics, Research, Signal Processing, 3D Printing, CAD, Webdev/Appdev

## HONORS & AWARDS

- FRC604: City of San Jose Recognition for STEM Outreach and Team Performance 2024
- WCP CADathon/Robot Design Challenge Finalist (Top 10 Internationally) 2024

- FRC604: World Championship Milstein Division Winner (12/3500 Internationally, 4/300 in CA)
- OneHacks III Hackathon: Third Place (3/120 Internationally)

2024  
2023