

ABHAY SHUKLA

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EXPERIENCE

- Stanford Center for Biomedical Informatics Research**
Gevaert Lab Student Researcher
November 2024 - Present
California
- Developed scalable Machine Learning/Computer Vision foundation models for segmenting microscopic to massive anatomical structures in medical imagery.
 - Produced detailed scientific documentation to communicate research findings. All research done under the mentorship of researcher Chris Sadée.
- UCLA COSMOS (Brain-Inspired Computing/Artificial Intelligence Cohort)**
Student Researcher
July 2024 - August 2024
California
- Integrated foundational neurobiological principles into machine learning models for image geolocation, rat neuron behavior decoding, and handwritten character recognition under the mentorship of UCLA Prof. Hugh Tad Blair.
- FRC 604: Quixilver Robotics**
Controls/Software Lead (10)
June 2022 - Present
California
- Designed and implemented high-performance FRC robot components, integrating strategic mechanism design, real-time computer vision, and multi-modal sensor fusion to boost autonomous and teleoperated robot 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, empowering data-driven competitive match strategy and optimal partner selection. App currently serves 175+ users and has collected data for 1000+ matches.
- Pavyl**
Software Design Advisor
January 2025 - Present
California
- Advised development of innovative large language model tools with unlimited context windows and effective user interfaces, enabling AI to grow with users and transforming AI-powered applications.
- NEXUS Research Club**
Chapter Manager
August 2024 - Present
California
- Coordinate with local leaders of 8+ NEXUS chapters in California high schools to ensure access to high-impact research opportunities and increase club membership.

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 is one of the first models to generate stereo audio at 44.1 kHz. Also increased audio quality by 85% and reduced training time by 25x (compared to DrumGAN & WaveGAN respectively).
- Vox Transformis - Science Fair**
- Developed an AI-based framework to expand exposure to rare languages by using multimodal large language models to translate audio while preserving rhythmic, literal, and melodic features.
- SporeStrike - Pitch Slide Deck**
- Engineered an affordable drone-based fungicide disposal system and 3D-printed prototypes to prevent food waste equivalent to feeding 4 billion people. Project won first place 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 1)
- FRC604: World Championship Milstein Division Winner (12/3500 Internationally, 4/300 in CA) 2024
- OneHacks III Hackathon: Third Place (3/120 Internationally) 2023