ABHAY SHUKLA

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EXPERIENCE

Stanford Center for Biomedical Informatics Research November 2024 - Present
Gevaert Lab Student Researcher *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.

FRC 604: Quixilver Robotics June 2022 - Present
Controls/Software Lead (10) *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 January 2025 - Present
Software Design Advisor *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 August 2024 - Present
Chapter Manager *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 th first models to generate stereo audio at 44.1 kHz. Also increased audio quality by 85% and reducied 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 mutlimodal 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 *4.00 UW A-G*
Junior *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