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.

UCLA COSMOS (Brain-Inspired Computing/Artificial Intellegence Cohort) July 2024 - August 2024
Student Researcher *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.

Pavyl January 2025 - Present
Software Advisor *California*

- Advised on the creation of innovative large language model tools with unlimited context windows, enabling AI to grow with users and transforming AI-powered applications.

FRC 604: Quixilver Robotics June 2022 - Present
Controls/Software Lead (10) *California*

- Designed and implemented high-performance FRC robot components, integrating real-time computer vision, multi-modal sensor integration, and strategic mechanism design 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.

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