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Internship/Fellowship National Institutes of Health (NIH) National Institute of Biomedical Imaging and Bioengineering (NIBIB) Bethesda, Maryland

Novel Computer Vision Systems for Automated Behavior and Activity Detection in Animal-based Studies

Computer Vision / Machine Learning / Embedded Systems / Experimental Biology

Email resume to orise2022@mail.nih.gov

Majors:	✓ Computer Science	✓ Computer Engineering	✓ Electrical Engineering	✓ Biomedical Engineering
Class standing:	Undergraduate and Graduate.			
Focus:	<i>Novel Computer Vision Systems for Automated Behavior and Activity Detection in Animal-based Studies</i>			
Internship benefits:	Exposure to different aspects of:		➤ Hardware acceleration	
	➤ Computer vision		➤ Python programming	
	➤ Machine Learning		➤ Experimental biology	
	➤ Deep learning tools (PyTorch, TensorFlow)		➤ Cloud computing	
			➤ Database access	
Work environment:	✓ NIH is one of the world's foremost medical research centers ✓ Academic/research environment conducive of learning and innovation ✓ Name recognition (e.g., journal publication, conference presentation) for significant contributions			
Time commitment:	One year, full-time, starting Summer 2023.			
Citizenship:	Not required Foreign nationals must have resided in the U.S. for at least three (3) of the past five (5) years.			

The National Institute of Biomedical Imaging and Bioengineering (NIBIB) at the National Institutes of Health (NIH) is looking for a motivated student or recent graduate to advancing the progress on high impact projects for automated tracking and behavior detection of research animals. The fellowship will offer an exciting opportunity for the fellow to gain in depth knowledge of the popular field of computer vision and deep learning. The work involves tailoring the latest algorithms developed by leaders in the field for object detection and pose estimation to track and potentially uniquely identify (in case of multiple animals per cage) multiple animals. Also adapting behavior detection methods to

profile general behaviors (e.g., walking, eating, climbing) as well as behaviors of special interest to different investigators (e.g., breathing rate detection for COVID-19 hamsters, fine-grained mouse scratching for itch and pain studies, seizure detection, etc). The work will allow the fellow to gain and solidify skills in Python and deep learning packages such as PyTorch. The fellow will acquire experience in cloud computing to streamline processing for large and/or long-term animal studies. The projects also offer an opportunity to gain familiarity with 3D CAD design along with fabrication and prototyping which might be needed for novel system design for specialized animal studies. The research effort will be summarized in conference and journal publications for which the fellow will get authorship recognition.

The employment opportunity is a one year fellowship. The opportunity is fit for students majoring in computer science, computer engineering, electrical engineering, or biomedical engineering.