



NEVADA SYSTEM OF HIGHER EDUCATION SPONSORED PROGRAMS



HIGHLIGHTS

FALL 2023

NASA EPSCoR

NEVADA RECEIVES NASA EPSCoR RESEARCH AWARD FOR \$100,000 TO DELIVER A PAYLOAD TO THE INTERNATIONAL SPACE STATION (ISS)



The Nevada System of Higher Education (NSHE) has been awarded \$100,000 over a period of three years for the project "A compact, non-invasive, and efficient vision screening system for long-term spaceflight missions." This project is funded through The National Aeronautics and Space Administration's (NASA's) Established Program to Stimulate Competitive Research (EPSCoR), in collaboration with the International Space Station (ISS) Research Office.

Unique neuroocular changes affect a subset of astronauts who have completed prolonged spaceflight missions. Due to its unique pathophysiology, a new case definition was proposed, and the condition was renamed Spaceflight Associated Neuro-ocular Syndrome (SANS). A significant barrier in determining the etiology of SANS while monitoring its risk of development and progression is the lack of technologies onboard long-term spaceflight missions that are capable of measuring crew member's vision in-flight, objectively, quickly, and reliably.

Limitations of terrestrial analogs and the unknown factors contributing to SANS, such as microgravity, elevated CO2 levels, or other spaceflight exposures, present a significant unmet need in collecting physiological and functional data related to astronaut vision during long-term spaceflight.

Therefore, the main objective of the proposed work is to deliver a payload to the International Space Station (ISS), comprising technologies that are designed to measure various aspects of astronauts' vision quickly and reliably.

"Our technology integrates a fully developed battery of user-friendly vision tests into a compact screening device, e.g., a virtual reality head-mounted display (VRHMD)", said Dr. Alireza Tavakkoli, Associate Professor at the University of Nevada, Reno, and the technical lead for the project. "In-flight vision screening data will be an invaluable asset to help scientists better study SANS and develop and monitor the effects of countermeasures."

"The Nevada NASA EPSCoR program is thrilled that Dr. Tavakkoli and his team will have an opportunity to test their technology on the International Space Station", said Dr. Eric Wilcox, Nevada NASA Programs Project Director. "The EPSCoR program is invaluable to researchers in Nevada to get our innovations out of the lab and into space."

The long-term goal of this project is to establish a suitable protocol for integrating this vision screening platform into future spaceflight missions to be able to monitor crew member's visual health in real-time and with frequencies currently not possible.

"We are proud that Dr. Tavakkoli and his team have this opportunity to contribute to the health and well-being of our NASA astronauts," University of Nevada, Reno Engineering Dean Erick Jones said. "One of our college's main focus areas is unmanned vehicles and the new space frontier, and this work augments NASA's efforts to explore the unknown in air and space, and to innovate for the benefit of humanity."

"EPSCoR enables eligible states to advance in vital science and research areas," Mridul Gautam, vice president for Research and Innovation at the University of Nevada, Reno and chair of the EPSCoR/IDeA Coalition Board, said. "With this NASA EPSCoR funding support and inspired leadership from our faculty, research in computer science and atmospheric sciences will continue to help the University produce a highly prepared workforce."

HARNESSING THE DATA REVOLUTION FOR FIRE SCIENCE (HDRFS) WEBSITE



HDRFS Website Launch!

hdrfs.epscorspo.nevada.edu

Over the summer, we launched a new website for the RII Track-1: Harnessing the Data Revolution for Fire Science (HDRFS) project. On the HDRFS website, you can find information about our current NSF project and the different research components, as well as funding opportunities and resources as they become available. The new website will be updated regularly with timely updates about our programs, recent news, and upcoming events.

The overarching goal of the HDRFS project is to increase the capacity of Nevada for wildland fire research, education, and workforce development and to demonstrate this increased capacity through technology-enhanced fire science in the regionally important sagebrush ecosystem.

CONGRATULATIONS DR. JENNY OUYANG, FULBRIGHT SCHOLAR!



We would like to congratulate Dr. Jenny Ouyang, Associate Professor in the Biology Department at the University of Nevada, Reno for receiving a U.S. Fulbright Scholar fellowship for the 2023-2024 academic year. She was a previous NSF EPSCoR RII Track-4 recipient for her research on understanding how animals adapt to urban environments. Dr. Ouyang

said “the EPSCoR grant allowed me to set up the field sites currently used in my research to understand how urbanization impacts behavior, physiology, and fitness in birds. We found notable differences between urban and rural individuals, such that I am very keen on seeing if these differences would be similar in the tropics, which is the research topic of my Fulbright.”

Her Fulbright fellowship is part of her yearlong sabbatical where she’ll focus on researching birds, mainly house wrens, in various locations, both rural and urban, across the globe to see if the same behavioral patterns emerge that she has observed in northern Nevada. Upon completion of her research, she’s hoping to find how we can change cities to benefit human and animal health. Ouyang will be examining the effects of pollutants, such as city light, noise and heavy metals to see how we can make cities more livable.

WELCOME

DARLENE ARANDA, NASA PROGRAM COORDINATOR



Darlene Aranda joined the Nevada System of Higher Education System Sponsored Programs Office & EPSCoR in September 2023 as the NASA Program Coordinator for the Nevada NASA Space Grant Consortium (NVSGC) and NASA EPSCoR programs. In this role, she assists the Research Administrator and Project Director in implementing NASA EPSCoR and Space Grant program goals. She holds a BA from UC Berkeley and an MPA from Cal State Long Beach. She has served in a number of roles in higher education across the U.S. Prior to joining the EPSCoR office, she worked at UNLV’s Academic Success Center as interim Budget Manager.