Akash Karri

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EDUCATION

2019-2023 (expected)	**North Carolina State University**
	B.S. Mechanical Engineering
	Pre-Medical

2017-2019	**North Carolina School of Science and Mathematics**
	High School

ONGOING PROJECTS/WORK

Oct 2020 – Present

System Lead Engineer for Mars Ascent Vehicle Design Project Group
North Carolina State University

Leading a team of 12 other undergraduate engineers at North Carolina State University to design the concept of the Environmental Control and Life Support Systems (ECLSS) of a Minimal Mars Ascent Vehicle (MAV) as per Theme 2 of NASA's "Revolutionary Aerospace Systems Concept Academic Linkage" 2020-2021 competition to transport two astronauts from the surface of Mars to Lower Martian Orbit with a MAV of less than 20,000 kg. With four other engineering leads (Systems, Electrical, Structures, Fluids/Propulsion), we work in a team of ~45 undergraduate engineering students to develop the concept of a Minimal MAV while competing against other similarly structured graduate university teams.

Oct 2020 – Present

Spaceflight Training and Preparation for Commercial Participants Systematic Review
UK Space LABS × SGAC Collaboration

Working under Professor Simon Evetts (previous Director of the Medical Projects & Technology Unit at the European Astronaut Centre, Cologne) on an international team with medical students/physicians of the UK Space Life and Biomedical Sciences Association and members of the Space Generation Advisory Council to write the first systematic review regarding the training of agency and commercial astronauts to serve as guidance for future regulations concerning spaceflight training for commercial customers. Was selected for the team of six out of 130+ applicants.

Sep 2020 - Present

Lunar Analog Mission CAPCOM/Mission Support
Hawai'i Space Exploration Analog and Simulation (HI-SEAS)

I was part of Mission Control team as a CAPCOM for the Selene I Lunar Analog mission that took place at HI-SEAS in September. The CAPCOM role is the only person in Mission Control that regularly and directly communicates with astronauts on a space mission. In addition to providing information to the analog astronauts about weather and approving their trips out of the habitat, I also aided them in their research and troubleshooted technology hiccups throughout the mission. I will continue to be in the Mission Support and CAPCOM roles for the upcoming Selene II and Sensoria M3 missions in late November and early December.

Jul 2020 – Present

Predicting COVID-19 Case and Mortality from Adherence to Social Distancing based on Earth Observation Air Pollution Data
SGAC-SMLS Team

Collaborating with members and the co-leads of the Space Generation Advisory Council's Space Medicine and Life Sciences team and a London epidemiologist to write a paper discussing the potential of using satellites to measure air pollution as a technique of deriving social distancing adherence. In addition to developing much of the data processing for figures with Python and R, I additionally developed Neural Networks to predict increases in COVID-19 cases after a 3 to 14 day "incubation time" in major European cities based on satellite air pollution data, Google Mobility data from phones, population density, and the social distancing mandates of each city. Currently writing manuscript prior to sending to publications in December 2020.

Feb 2020 – Present

Machine Learning Approach to Automatic Detection and Localization of Eosinophils (Summer Interdisciplinary Research Internship)
Cruse Lab (North Carolina State University)

Currently writing manuscript for a first-author publication regarding the use of the YOLOv4 Convolutional Neural Network framework to automate the task of locating eosinophils (type of white blood cell) from slide images of mice lymph nodes. Originally hired by the Cruse Lab to work in projects relating to the testing of mRNA drugs against pulmonary fibrosis and asthma, the COVID-19 pandemic ended my in-person lab experience and led me to independently develop and lead this new initiative and project. Working with images provided by Pathologist Dr. Doug Snider, I developed and trained a convolutional neural network workflow capable of finding eosinophils with accuracy close to that of a board-certified pathologist.

Aug 2019 – Present	**Conrad Challenge Alumni Leadership Council Team Co-Director** *Conrad Foundation*

As the Co-Director of the Advance and Inspire team in the Conrad Challenge Alumni Leadership Council, I focus our team to providing resources and opportunities for the Conrad Challenge community through a variety of initiatives such as mentorship, webinars, workshops, and panel discussions with industry leaders. The Conrad Challenge is the largest international youth entrepreneurship competition and was instrumental in helping me realize my passion in the intersection of space, medicine, and engineering.

PAST PROJECTS/WORK

Jun 2020 – Aug 2020	**Summer Intern** *CardioVisual Inc.*

CardioVisual Inc. is a medical company aimed at bringing cardiologist-curated and trusted content in an easy-to-understand format to patients via their CardioVisual app. With 2 co-interns, I planned and developed an online website-based e-learning platform and organized webinars to create physician-to-physician content videos.

Oct 2018 – May 2019	**Improved Cosmic Radiation Protection Suit Design Team Lead** *NASA HUNCH / Conrad Challenge Competitions*

Lead team to create novel design of radiation suits for deep-space missions that were more flexible, protective, and comfortable than the current state-of-the-art design. Presented project at NASA Langley and NASA Kennedy Space Centers.

Jun 2018 – Feb 2019	**Neuroscience Research Internship** *Gong Lab (Duke University)*

Collaborated with other researchers to train/test a 3D Convolutional Neural Network to segment active neurons from 1-photon calcium-imaging videos of in-vivo mice brains. Automating the process of segmenting active neurons allows for future studies to relate various mouse activities to specific neural pathways and potentially functionally mapping brains.

[Poster](#)

Oct 2017 – May 2018	**Exercise Harness Design for Orion Space Capsule Team Lead** *NASA HUNCH / Conrad Challenge Competitions* Lead team to design exercise harness with single-point attachment compatible with NASA's HULK exercise system. The HULK system was developed due to the exercise system of the International Space Station being too large for the Orion capsule. Presented project at NASA Langley, NASA Johnson, and NASA Kennedy Space Centers
Jan 2018	**Microbiology Research** *Schmid Lab (Duke University)* Explored the influence of knocking out the tbsP. gene on the growth and morphology on the archaea *H. volcanii.* Poster

PROFESSIONAL ASSOCIATIONS:

- Students for the Exploration and Development of Space – USA (SEDS – USA)
    - o North Carolina State University SEDS
- Space Generation Advisory Council (SGAC)
    - o SGAC Space Medicine and Life Sciences Working Group
- Conrad Challenge Alumni Association