

# Dominic P. Tanzillo

MATHEMATICS AND NEUROSCIENCE · INSTRUCTOR FOR SPACE MEDICINE

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## Education

### Duke University

B.S. IN MATHEMATICS AND B.S. IN NEUROSCIENCE WITH A MINOR IN CHEMISTRY

*Durham, NC 27708*

*August 2016 - May 2021*

## Honors, Awards, and Fellowships

May 2021 **Magna Cum Laude**, Duke University Graduation

*Durham, NC 27708*

May 2020 **Phi Beta Kappa - Junior Admit**, Duke University

*Durham, NC 27708*

May 2019 **Summer Neuroscience Fellow**, Duke University

*Durham, NC 27708*

2016 - 21 **Dean's List**, Duke University

*Durham, NC 27708*

## Courses and Publications

### Course: Space Medicine

*Duke University - Durham, NC 27708*

DUKE UNIVERSITY COURSERA PLATFORM

*July 2021 - Present*

- Scripted, recorded, and directed six weeks of videos exploring medicine in space.
- Developed learning assessments, managed guest lecturers, and ran live sessions for the **250+ students** in the first cohort, summer 2021.
- Opened course up to students outside of the Duke network [with Duke Learning Innovation](#) for anyone to be introduced to the field.

### Paper: Stereotactic and Functional Neurosurgery

*San Francisco CA, 94115*

CT AND MRI IMAGE FUSION ERROR: AN ANALYSIS OF CO-REGISTRATION ERROR

*February 2021*

- Second name author for quantifying the error in co-registration of two medical imaging formats.
- Collected data, ran statistical analysis, and verified the existence of a bias in the auto-merged function.
- Publication is available at: <https://doi.org/10.1159/000511114>

### Course: Space Health 101

*Duke University - Durham, NC 27708*

DUKE UNIVERSITY AND BAYLOR COLLEGE OF MEDICINE

*August 2020 - May 2021*

- Taught undergraduate seminar for Duke students to learn about the health hazards and practice of medicine in the space environment.
- Integrated physics demonstrations, virtual reality simulations, and medical case studies for socially distant learning.
- Hosted guest lectures from Duke Medical Center, NASA Johnson Space Center, and the United States Air Force.
- Recorded lectures from House Course available on the [TRISH Orbit Platform](#) for anyone in the world to enjoy the lectures.
- Provided syllabus, textbook, and lecture slides to two students to continue the course after graduating.

## Work and Research Experience

### Tietronix Software, Inc.

*Houston TX, 77058*

SOFTWARE DEVELOPER

*June 2021 - Present*

- Developing virtual reality training modules and software for astronaut, surgeon, and first responder medical education.
- Preparing for the NASA Artemis Missions on a classified project.

### Duke University - Department Electrical and Computer Engineering

*Duke University - Durham, NC 27708*

RESEARCH ASSISTANT FOR PEARSON LAB

*August 2020 - January 2021*

- Developed online machine learning algorithms for real-time spike sorting.
- Completed research independent study report in fall 2020.

### NASA Undergraduate Space Research Association - USRA

*Johnson Space Center - Houston TX*

SPACECRAFT SOFTWARE - RESEARCH ASSOCIATE

*January 2020 - August 2020*

- Developed machine learning models for Pilot Training Next Software for quantifying cognitive states of Air Force Pilots.
- Tested and integrated commercial off-the-shelf biometric devices for measuring pilot physiology.

### Duke University School of Medicine - Department of Neurobiology

*Duke University - Durham, NC 27708*

RESEARCH ASSISTANT FOR DR. FAN WANG

*August 2017 - December 2019*

- Built maze and microcircuit to record neural activity in the trigeminal nuclei of mice.
- Received Summer Neuroscience Fellow grant to present on results at the Summer 2019 Duke Undergraduate Research Showcase.
- Mentored high school student to publish methods paper on maze design and behavioral schema.
- Completed two semesters of independent study research reports in fall 2018 and fall 2019

### University of California San Francisco School of Medicine: Neurosurgery

*San Francisco CA, 94115*

UNDERGRADUATE RESEARCHER WITH DR. LARSON

*May 2017 - June 2018*

- Shadowed neurosurgeries at the San Francisco Office of Veterans Affairs and attended UCSF Neurosurgery Grand Rounds.
- Conducted and published a research project quantifying the error rate of a software used in Deep Brain Surgery.

# Leadership

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## Duke Students for the Exploration and Development of Space (Duke SEDS)

*Duke University - Durham, NC 27708*

FOUNDER AND PRESIDENT

*April 2020 - May 2021*

- Founded Duke's Branch of SEDS to bring together students interested in designing the engineering, medical, and policy solutions for humanity's future in space.
- Wrote constitution to receive full recognition as a club with the university.
- Brought 40 members together in the inaugural year with star gazing, astronaut talks, and science demonstrations.
- Oversaw the development of the SEDS USA Space Health Platform to connect college students and researchers to develop astrobiology and bioastronautics research.
- Wrote [an article](#) for an online publication and appeared as [a podcast guest](#) to promote space investment and research.

## Duke University EMS

*Duke University - Durham, NC 27708*

AMERICAN HEART ASSOCIATION, CONTINUING EDUCATION, AND STOP THE BLEED INSTRUCTOR

*April 2019 - May 2021*

- Worked in the Durham community and on the Duke campus, certifying as an official American Heart Association BLS instructor.
- Led continuing education training sessions for Duke University EMS on the topics of patients with altered mental statuses and the physics of acceleration and the impact on the vascular system.
- Became Stop the Bleed Instructor before the COVID-19 Pandemic.

## Camp Kesem at Duke University

*Duke University - Durham, NC 27708*

COUNSELOR AND MAKE THE MAGIC DIRECTOR AND BREAKOUT LEADER

*August 2017 - December 2019*

- Headed a 25 person team to organize the 2018 and 2019 Magic the Magic Charity Galas which respectively earned over **\$16,000** and **\$25,000** to support campers through and beyond a parent's cancer.
- Attended and voted at weekly executive meetings to oversee the recruitment, expansion, and planning of Camp Kesem at Duke University.
- Presented at monthly General Body Meetings to update progress and receive

## Round Table

*Duke University - Durham, NC 27708*

DORM PRESIDENT

*August 2018 - December 2019*

- Presided over 80 person dorm community centered around community service and faculty interactions.
- Chaired 12 person committee dedicated to planning events and increased attendance at dorm functions by four fold during my tenure.
- Organized semester long team event focused on bringing together different members of the dorm with limited interactions.
- Instituted reforms to require all members receive anti-harassment and cultural inclusion education.

## Duke Catholic Center

*Duke University - Durham, NC 27708*

BIBLE STUDY LEADER

*August 2020 - Present*

- Led the faith formation of 10 other students.
- Sponsored the Confirmation for one small group attendant.
- Wrote [an article](#) for an online faith publication - Catholicism Coffee.

# Volunteering and Other Medical Experiences

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## Camp Kesem at Duke University

*Duke University - Durham, NC 27708*

COUNSELOR

*December 2016 - Present*

- Provided annual support for children through and beyond their parents cancer.
- Attended week or two-week long camp sessions each year serving as a counselor for 12-13-year-old male identified campers.
- Worked to make camp accessible for everyone, especially campers with special needs and neurodivergences.
- Personally raised over **\$1000** each year to sponsor campers to attend Camp Kesem at Duke University's week of summer camp.

## Duke University EMS

*Duke University - Durham, NC 27708*

VOLUNTEER EMERGENCY MEDICAL TECHNICIAN

*September 2018 - May 2021*

- Nationally Registered EMT certified to practice to North Carolina and California.
- Volunteered at Duke basketball and football games to care for patients and players.
- Attend three hours of continuing education per week.
- Shadowed Duke LifeFlight paramedics and nurses to observe rural medicine and flight medicine and confirm my interest in aerospace medicine.

## Relmagine Medicine

*Duke University - Durham, NC 27708*

UNDERGRADUATE RESEARCH FELLOW

*May 2019 - December 2019*

- [Relmagine Medicine](#) is a pioneering program seeking to introduce the medical humanities to aspiring healthcare professions to emphasize patient focused medicine.
- Shadowed non-doctor medical staff including chaplains, house keepers, and hospice workers to gain a larger appreciation of the hospital environment and power hierarchies.
- In the fall of 2019, the cohort took part in a weekly course to explore themes initially developed over summer. In that time I shadowed Dr. Ray Barfield as in a pediatric cancer ward and saw him apply lessons discussed in Relmagine Medicine in the field.

## Engineering World Health

*KCMC - Moshi, Tanzania*

TANZANIAN FIELD ENGINEER

*June 2018 - August 2018*

- Worked in a Duke Engage Project to refurbish medical equipment in Tanzanian hospitals.
- Worked at Kilimanjaro Christian Medical Center, one of Tanzania's largest hospitals, to refurbish over 40 pieces of medical equipment.
- Trained Tanzanian doctors, engineers, and hospital staff on 27 types of medical equipment.
- Installed a backup power supply for the engineering department to allow for continued repair of medical equipment during frequent blackouts.