Gregory M. Nero

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EDUCATION:

University of Arizona
2020 - Current | Tucson, AZ
Optical Sciences, PhD Student
Rochester Institute of Technology
2016 – 2020 | Rochester, NY
B.S. Imaging Science | Astronomy Minor | American Sign Language and Deaf Cultural Studies Immersion
Hopewell Area High School
2012 – 2016 | Aliquippa, PA

RESEARCH EXPERIENCE:

Unaffiliated Collaborative Project
June 2020 – Current | Remote
Collaborating with Dr. Nishant Malik and other students on modeling diseases.
Center for Imaging Science
August 2019 – May 2020 | Rochester, NY
Developed methods for optical matched filtering using computer-generated holography.
Space Telescope Science Institute, Intern
June 2018 – August 2018 | Baltimore, MD
Worked with a number of professionals at the institute to explore the potential applications of transfer learning and neural networks for astronomical purposes. Proved the ability for neural networks to classify similar images in a set using transfer learning.
Center for Imaging Science, Undergrad Research Assistant
August 2017 – December 2017 | Rochester, NY
Assisted with research in the Advanced Instrumentation Lab developing code/equipment for the RIT Multi-Object Spectrometer (RITMOS). Responsible for and independently designed the FITS file data-collection pipeline and the flat-field calibration circuit and screen design.

WORK EXPERIENCE:

Ball Aerospace, Technical Intern – Optical Engineer
June 2019 – August 2019 | Boulder, CO
Supported and lead efforts to develop technologies, including ultra-stable bonding, picometer actuation, and wave front sensing and control, that will enable future space-based telescope mission objectives. Volunteered time to design and deploy payloads on an atmospheric balloon to collect upper-atmospheric data, including 360-degree video for VR.
Defense Advanced Research Projects Agency (DARPA), Image Data Technician
June 2017 – August 2017 | Rochester, NY
Collaborated with a team of students and professionals doing media-forensics related work. Became very familiar with image manipulation techniques in Photoshop, image metadata importance, and the collection of large quantities of ground truth data. Gained exposure to the algorithms responsible for manipulation detection.
Center for Imaging Science, Stockroom Assistant
February 2017 – May 2017 | Rochester, NY
Managed, organized, and distributed equipment within the Center for Imaging Science.

TEACHING EXPERIENCE:

Center for Imaging Science, Teaching Assistant
January 2019 – May 2019 | Rochester, NY
Class: Linear and Fourier Mathematics
Center for Advancing STEM Teaching, Learning & Evaluation, Learning Assistant
January 2018 – May 2018 | Rochester, NY
Class: University Physics I

Rochester Institute of Technology Academic Support Center, Math and Physics Tutor
September 2017 – December 2017 | Rochester, NY
Class: Any, upon request

PUBLICATIONS:
An Unsupervised Neural Network Classification Technique for Automated Image Discovery in Astronomy
Craig K. Jones, Joshua Peek, Greg Nero, Richard L. White, Sarah Kendrew, Jonathan Hargis
In progress.
On-sky performance evaluation of RITMOS, a micromirror-based multi-object spectrometer
Anton Travinsky, Dmitry Vorobiev, Kathleen Oram, Gregory M. Nero, Zoran Ninkov
Proc. SPIE 10702, Ground-based and Airborne Instrumentation for Astronomy VII, 107021N (6 July 2018);
doi: 10.1117/12.2313690

CONFERENCE/EVENT PARTICIPATION:
University of Arizona Optics and Photonics Winter School and Workshop
2020 | Tucson, AZ
Attendee and poster session.
Optical Matched Filtering with Computer-Generated Holography
233rd American Astronomical Society Meeting
2019 | Seattle, WA
Poster session.
Exploring Space with Neural Networks
Nero, Peek, Kendrew, Jones
The Third Global Women of Light Symposium (WiSTEE Connect + OSA)
2018 | Washington, DC
Volunteer
Center for Advancing STEM Teaching, Learning & Evaluation Symposium
2018 | Rochester, NY
Poster session.
Creating and Evaluating an Educational Video on Moment of Inertia
Nero, Poirier, Chabot, Lusignan

EVENT PLANNING:
hack.tiff
2020 | Rochester, NY
Primary event coordinator for the Chester F. Carlson Center for Imaging Science's first image-processing hackathon.

TECHNICAL SKILLS:
C++ | Python | MATLAB | Git | Jupyter | R | OpenCV | Adobe Photoshop | Unreal Engine | Zemax | NetworkX
igraph | WordPress

HONORS:
Rochester Institute of Technology
Summa cum laude | Chester Carlson Scholar | RIT Founder's Scholarship | Hughes Scholarship
Undergraduate Research Scholar | Nathaniel Rochester Society Scholar | John Wiley Jones Scholar
Goldwater Nominee
Hopewell Area High School
Salutatorian

SERVICE:
Imaging Science Club, President
May 2019 – May 2020 | Rochester, NY
RIT Improv, Vice-President
May 2019 – May 2020 | Rochester, NY
College of Science Student Advisory Board, Imaging Science Representative
September 2017 – May 2020 | Rochester, NY

Imaging Science Club, Treasurer
July 2018 – May 2019 | Rochester, NY
RIT Mental Graffiti, (RIT slam poetry group) Treasurer
January 2017 – May 2018 | Rochester, NY

RIT Newman Center, (Religious group) Volunteer and Choir Member
September 2016 – December 2018 | Rochester, NY

PERSONAL PROJECTS:
Modelling Experiences with Geometry, Emotions and Feelings
Developing a geometric model to express experiences using emotions and feelings.
Thermal Exploration of Glasswork
Collaborator: David Schnuckel (Assistant Professor – RIT School of American Crafts)
Exploring glassblowing and glass-working practices with thermal camera equipment.