

# 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

Creating and investigating coevolving SIR epidemic models with Dr. Nishant Malik.

### ***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. Paper in progress.

### ***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:**

***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*

***233<sup>rd</sup> 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:**

***University of Arizona***

Joseph W. Goodman Graduate Student Endowed Scholarship in Optical Sciences

***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.