

# Gregory M. Nero

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GitHub: <https://github.com/gregnero>

## EDUCATION:

### *University of Arizona*

2020 - Current | Tucson, AZ

Optical Sciences, PhD Student – Research Associate

### *Rochester Institute of Technology*

2016 – 2020 | Rochester, NY

B.S. Imaging Science | Astronomy Minor | American Sign Language and Deaf Cultural Studies Immersion

## RESEARCH/PROJECT EXPERIENCE:

### *University of Arizona College of Optical Sciences*, Graduate Research Assistant

May 2022 – Current | Tucson, AZ

Computational imaging for super-resolution imaging systems. (Advisor: Dr. David Brady)

### *University of Arizona College of Optical Sciences*, Graduate Research Assistant

August 2021 – Current | Tucson, AZ

Beam steering and optical engineering for augmented reality displays. (Advisor: Dr. Yuzuru Takashima)

### *University of Arizona College of Optical Sciences*, Graduate Research Assistant

January 2021 – August 2021 | Tucson, AZ

Synthesized, recorded, and characterized advanced volume holograms.

### *University of Arizona College of Optical Sciences*, Graduate Research Assistant

August 2020 – December 2020 | Tucson, AZ

Contributed to an ongoing optical neural network research project.

### *Unaffiliated Collaborative Project*, Network Scientist

May 2020 – November 2020 | Remote

Created and investigated coevolving SIR epidemic models.

### *RIT Center for Imaging Science*, Undergraduate Student Researcher

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

Explored the potential applications of transfer learning for categorizing large sets of astronomical image data.

## WORK EXPERIENCE:

### *Arizona Optical Metrology*, Intern

June 2022 – May 2023 | Tucson, AZ

Computer-generated hologram fabrication process development.

### *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.

## TEACHING EXPERIENCE:

### *James C. Wyant College of Optical Sciences*, Graduate Teaching Assistant

January 2022 – May 2022 | Tucson, AZ

Class: OPTI 280 – Computer Programming Workshop

**James C. Wyant College of Optical Sciences**, Graduate Teaching Assistant

August 2021 – December 2021 | Tucson, AZ

Class: OPTI 471A – Advanced Optics Laboratory

**Center for Imaging Science**, Teaching Assistant

January 2019 – May 2019 | Rochester, NY

Class: Linear and Fourier Mathematics for Imaging

## **PUBLICATIONS:**

***Bandwidth optimization for the Advanced Volume Holographic Filter***

Alcaraz, Pedro Enrique, Gregory Nero, and Pierre-Alexandre Blanche. "Bandwidth optimization for the Advanced Volume Holographic Filter." *Optics Express* 30.1 (2022): 576-587.

***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:**

***National Science Foundation International Research Experience for Students (NSF IRES)***

2022 - Current | USA & Taiwan

Program Participant

*US- Taiwan Advanced Study Institutes (ASIs) for Science, Technology and Manufacture of Future Display Devices and Systems*

***SPIE – Photonics West & AR/VR/MR 2023***

January – February 2023 | San Francisco, CA

Conference Paper and Poster Presentation

*Field-of-view expansion via diffractive image steering and prism array*

<http://dx.doi.org/10.1117/12.2649373>

***Optica - Frontiers in Optics 2022***

October 2022 | Rochester, NY

Student Leadership Conference attendee and representative from the University of Arizona

***University of Arizona Optics and Photonics Winter School and Workshop 2020***

2020 | Tucson, AZ

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

## **HONORS:**

***University of Arizona***

Joseph W. Goodman Graduate Student Endowed Scholarship in Optical Sciences | H. Angus Macleod Scholarship Funded by VIAVI Solutions, Inc.

***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

## **SERVICE/VOLUNTEERING/OUTREACH:**

*Heirloom Farmers Market*, Volunteer

February 2022 - Current | Tucson, AZ

*Tucson Zine Fest 2023*, Event Volunteer

April 2023 | Tucson, AZ

*University of Arizona College of Optical Sciences Graduate Recruitment Team 2023*, Team Member

March 2023 | Tucson, AZ

*University of Arizona College of Optical Sciences Laser Fun Day 2023*, Volunteer

March 2023 | Tucson, AZ

*University of Arizona College of Optical Sciences Prism Week 2023*, Volunteer

February 2023 | Tucson, AZ

*Desert Air Market Fall 2022*, Event Volunteer

November 2022 | Tucson, AZ

*Tucson Meet Yourself 2022*, Event Volunteer

October 2022 | Tucson, AZ

*Phoenix Zine Fest 2022*, Event Volunteer

September 2022 | Mesa, AZ

*University of Arizona College of Optical Sciences Outreach Outing*, Volunteer

July 2022 | Tucson, AZ

*University of Arizona College of Optical Sciences Laser Fun Day 2022*, Volunteer

April 2022 | Tucson, AZ

*University of Arizona College of Optical Sciences Laser Fun Day 2021 (Virtual)*, Volunteer

April 2021 | Tucson, AZ

*University of Arizona College of Optical Sciences Winter School and Workshop 2021 (Virtual)*, Volunteer

January 2021 | Tucson, AZ

*The University of Arizona Student Optics Chapter*, Treasurer

August 2020 – May 2022 | Tucson, AZ

*Imaging Science Club*, President

May 2019 – May 2020 | Rochester, NY

## **CLASS LIST:**

*University of Arizona*

Electromagnetic Waves, Optical Design and Instrumentation I, Linear Systems Fourier Transforms, Diffraction and Interferometry, Optical Physics and Lasers, Imaging Physics and Devices, Computational Imaging, Probability and Statistics in Optics, Principles of Image Science, Lens Design, Holography and Diffractive Optics, Computational Photography

*Rochester Institute of Technology*

Imaging Detectors, Complex Networks, Observational Astronomy, Harmonica and the Blues, Financial Fitness, Rock Climbing, Imaging System Analysis and Modeling, Wines of the World, Cultural Anthropology, Extragalactic Astrophysics and Cosmology, Differential Equations, Image Processing and Computer Vision I and II, Interactions Between Light and Matter, Physical Optics, University Astronomy, Geometric Optics, Radiometry, Introduction to Creative Writing, Modern Physics I, STEM Education: Research and Practice, Fundamentals of Color Science, Linear and Fourier Mathematics for Imaging, Probability and Statistics for Imaging, University Physics I and II, Calculus I, II, and III, Introduction to Computing and Control, Intermediate American Sign Language I, Beginning American Sign Language I and II, Vision and Psychophysics, Introduction to Imaging and Video Systems, Introduction to Philosophy