

JOSEPH PALMO

Phone: 512-434-9690
Email: jpalmo@mit.edu

EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge, MA Expected: May 2027

- Ph.D. in Atmospheric Science

AMHERST COLLEGE, Amherst, MA May 2021

- Bachelor of Arts, Physics and Astronomy, *cum laude*
- *Thesis*: Simulated Scatter: Computational Modeling of (Sub)Stellar Accretion

RESEARCH EXPERIENCE

QUANTAQ, INC, Somerville, MA Jun. 2021-Aug. 2021

Data Scientist

- Built interactive, live-updating Plotly-Dash applications for internal data analysis, product development, and quality assurance and control
- Wrote python package **py-tofspec** for labeling time-of-flight mass spectrometry (PTR-TOF-MS) datasets in an effort to develop a low-cost soil VOC sensor
- Configured RaspberryPi to parse data from GRIMM-11d particle size distribution sensor and wrote app to run continuously as a connected data dashboard

HARVARD-SMITHSONIAN CENTER FOR ASTROPHYSICS, Cambridge, MA Aug. 2021-Present

Visiting Research Fellow

Advisor: Dr. Paul Green, Harvard SAO-CfA

- Co-led project dubbed Sensing the Dynamic Universe, an astronomy outreach **website** built for the blind and visually impaired community
- Wrote python to preprocess and sonify light curve and spectral data for various variable objects in the universe

NASA STUDENT AIRBORNE RESEARCH PROGRAM, Los Angeles, CA June-Aug. 2020

Research Intern

Advisor: Dr. Donald Blake, UC Irvine

- Designed and developed an individual atmospheric science research project, assisted in the operation of instruments onboard a NASA DC-8 aircraft

SUMMER UNDERGRADUATE RESEARCH FELLOWSHIP, Amherst, MA June-Aug. 2019

Astronomy Research Assistant

Advisor: Dr. Kate Follette, Amherst College

- Assisted Dr. Follette with her research project GAPlanetS: the Giant Accreting Protoplanets Survey.
- Iterated, evaluated, and improved upon the intricate process of data reduction which involved injecting fake planets in the images to determine what parameters should be plugged into various pieces of software, de-rotating and combining multi-wavelength images, and subtracting starlight from images

LEADERSHIP EXPERIENCE

AMHERST COLLEGE BASEBALL TEAM, Amherst, MA Sept. 2017-May 2021

Captain

- Named to the NESCAC All-Conference, All-Academic, and All-Sportsmanship teams (One of two baseball players in the conference to garner all three honors)
- Scheduled, organized, and ran offseason practices 2021 season

VOLUNTEER EXPERIENCE

CITIZEN ENABLED AEROSOL MEASUREMENTS FOR SATELLITES, Austin, TX June-Aug. 2020
Field Data Collector

- Collaborated with NASA-funded science team at Colorado State University
- Operated Aerosol and Optical Depth (AMOD) instrument in my backyard to improve local air quality measurements and therefore better understand the relationship with satellite observations

PRESENTATIONS

AMHERST SURF POSTER SESSION Sept. 2019
*Optimizing the GAPlanetS (**G**iant **A**ccreting **P**rotoplanets **S**urvey) Data Reduction Pipeline*

NASA SARP PROJECT PRESENTATION Aug. 2020
Dissecting Two Plumes of Elevated Toluene Concentrations at High Altitudes
[Video Link](#)

AMERICAN ASTRONOMICAL SOCIETY 237TH MEETING, iPOSTER Jan. 2021
Simulated Scatter: A Monte Carlo Approach to Understanding the Observed (sub)Stellar Mass-Accretion Rate Relation
[iPoster Link](#)

MEMBERSHIPS

American Geophysical Union Aug. 2020-Present

American Astronomical Society Oct. 2020-Present

PUBLICATIONS

Adams, J. et al. [including **Palmo, J.**] 2021, "Optimization Techniques for Karhounen-Loeve Image Processing Algorithms: Application to MagAO GAPlanetS Data", *Astronomical Journal*, submitted.

Follette, K.B. et al. [including **Palmo, J.**] 2021, "The Giant Accreting Protoplanet Survey (GAPlanetS) - Results from a Six Year Campaign to Image Accreting Protoplanets", *Astronomical Journal*, submitted.

Jarnot, A. et al. [including **Palmo, J.**] 2020, "A Comparison of Trace Gas Trends in Urban Areas Collected via Whole Air Sampling during the COVID-19 Pandemic", *American Geophysical Union 2020 Fall Meeting*, Abstract # A095-0001

Yang, M. et al. [including **Palmo, J.**] 2020, "NASA Student Airborne Research Program (SARP) Whole Air Sampling across the United States during the COVID-19 Pandemic", *American Geophysical Union 2020 Fall Meeting*, Abstract # A025-07

SKILLS

- Python: 3+ years of experience. NumPy, SciPy, Pandas, scikit-learn, matplotlib, seaborn, data science, Plotly-Dash interactive data dashboards
- Certificates: Machine Learning with Python (IBM), Neural Networks and Deep Learning (Deeplearning.AI), Improving Deep Neural Networks (Deeplearning.AI), Structuring Machine Learning Projects (Deeplearning.AI), Convolutional Neural Networks (Deeplearning.AI)
- Git, Github and Version Control, Familiar with Docker containerization and Poetry dependency management