Jose Perez

Tucson, AZ

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Research Interests

Exploring atmosphere and climate in planetary settings. Computational simulations; theory. Planetary habitability and exoplanet exploration through surveying. Spectral analysis on stars.

EDUCATION

B.S., Physics — May 2020 (Expected)
B.S., Astronomy
University of Arizona,
Tucson, Arizona

RESEARCH EXPERIENCE

Undergraduate Research Assistant — Summer 2018 - Present
Data Reduction Team
University of Arizona
Advisor: Dr. Daniel Apai

Project EDEN: Search for and characterize the closest habitable worlds, exoplanets. I am part of the data reduction team and I implemented Python programming language to develop the following products:

- Developed calibration pipeline that does bias and dark current subtraction, image flattening and cosmic ray removal. Compatible with VATT Telescope, LOT from Lulin Observatory, Kuiper 61" Telescope, Cassini, 1.23 m Calar Alto, 2.3 Bok Telescope, and 31" Schulman Telescope.
- Adapted about ~60% of edenAP, an automated photometry analysis and time series production pipeline, to match the project needs. Also, I added production of point spread function 2D/3D, and radial visualization of sources.
- Learned about systematic error corrections on photometry time series. Including relative photometry using comparison stars, and trend removal by external parameter decorrelation.

Undergraduate Research Assistant — June – August 2017
Cyclospora: Risks in Irrigation Waters
WAESO program - ACBS Dept., University of Arizona, Tucson, AZ

- Processed and Analyzed wastewater samples, and extracted DNA
- Collaborated with 3 other undergraduates and 2 graduate students
- Learned how to culture bacteria, and make media

- Showcase results in UROC poster session

POSTER PRESENTATIONS

Cyclospora: Potential Reservoirs and Occurrence in Irrigation Waters
August 7 2017
Authors Jazmyn Muhammad, **Jose Perez**, Daisy Alvarez,
Andy Diaz, Patricia Diaz, Daniela Cabrera, Kaitlyn Benally, Gerardo Lopez
Poster Presentation at UROC Poster Session

COMPUTER SKILLS

Programming Languages: C, Python, Java

Computational Physics Skills: Model Fitting, Ordinary/Partial differential equation solving, Fourier analysis, Newton technique as root finding, Implemented Random Forest for signal detection.

General Computational Skills: version control (Git), graphical interface development, implemented data structures like stacks, trees, linked lists, etc, Image convolution, white/black box and assertions debugging, automation of server and database management, command line interface for measurement devices.

LANGUAGE PROFICIENCY (for non-native English speakers)

Spanish: Fluent (Native)
English: Fluent

OUTREACH & COMMUNITY SERVICE

Immigrant Student Resource Center Intern Spring 2017
University of Arizona,
Tucson, Arizona

- Facilitated a couple of group meetings
- Participated in tabling to promote Sanctuary
- Data entry on scholarships that do not have immigration status requirements

Scholarships A-Z, Executive Member Spring 2017 – Spring 2018
Tucson, AZ
Non-profit organization that focuses on providing resources to students, families, and educators, in order to make higher education accessible to everyone.

- Assist in legal clinics, fundraising, and advocate direct actions
- Added fresh look at scholarships list through WordPress website managing, while facilitating updating through google spreadsheets.
- Assisted in other website projects like updates on FAQ sections

Co-organizer of the first public lecture presented in Spanish at the Steward Observatory: "Buscando Nuevos Mundos".

Fall 2018

WORK EXPERIENCE

Undergraduate Internship Fall 2018
Imaging Technology Lab – Dr. Michael Lesser

- Developed a Python interface for power meters, electrometers and multimeters.
- Explored usage of National Instruments interfaces through Python to substitute LabVIEW software.

Undergraduate Internship Spring 2019 - Present
AstroXR – Dr. Chi-kwan Chan
EHTGo Development: Event Horizon Telescope mobile augmented reality visualization

- Developed multi-platform application using Unity 3D engine, and Blender
- Implemented version control for project code management
- Supervisor of the EHTGo project's progression.

REFERENCES

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