Nabil **Freij**

RESEARCH SCIENTIST

✉ nfreij@seti.org & nabil.frei@gmail.com | ⌨ nabobalis | 🔗 nabil-freij | ⓘ 0000-0002-6253-082X | 🎓 Nabil Freij

Education

University of Sheffield

PhD - THE IDENTIFICATION AND ANALYSIS OF MHD WAVES IN LOCALISED SOLAR ATMOSPHERIC WAVE GUIDES *2011 - 2016*

University of Warwick

MASTER OF PHYSICS (MPHYS) *2007 - 2011*

Skills

Programming Languages	Python, Rust, C, IDL/SolarSoft, LaTeX, Bash, HTML & CSS
DevOps	Docker, PostgreSQL, Google Cloud Platform, Amazon Web Services, GitHub Actions, CircleCI
Packages	Web frameworks (Django & FastAPI), Scientific Python (numpy, pandas, xarray), Machine Learning (PyTorch, scikit-learn)
Other	MS Office, Git, GitHub, JIRA, Confluence, Linux, macOS, Windows

Employment History

SETI Institute

RESEARCH SCIENTIST *October 2024 - Present*

- Investigate how ML & AI techniques can be applied to understand the mechanisms for explosive and energetic events on the Sun
- Investigate how ML & AI techniques can be used to understand hyperspectral imaging data that will be obtained with MUSE
- Development of new research analysis and quicklook tools as well as tools for processing of scientific data
- Supporting scientific operations of NASA satellite instruments

Bay Area Environmental Research Institute (BAERi)

RESEARCH SOFTWARE ENGINEER *September 2021 - October 2024*

- Created bespoke research software to enable the analysis of data by other scientists
- Published software techniques and scientific results
- Worked with NASA and other partners like ESA to develop new software
- Maintained existing pipelines for existing NASA missions
- Created simulations of an upcoming NASA mission
- Provided training to scientists on how to use scientific software

University of Reading - Institute for Environmental Analytics

DATA ANALYST *August 2019 - August 2021*

- Created an asynchronous serverless API to serve datasets to a weather calibration and data segmentation framework
- Bolstered an existing live application focused on delivering crucial near real time weather data for commercial food suppliers
- Maintained cloud devices with live production software with rolling backups
- Created a new library to provide calibrated weather and historical climate data at any location, at any time within minutes

University of Leicester - Department of Health Sciences

RESEARCH SOFTWARE ENGINEER *March 2019 - June 2019*

- Worked on a new fullstack solution for the management of enrolled participants within the EXCEED Study
- Using Django, a Python web framework, with JavaScript to create a fully functioning web application deployed on the local network
- Worked on migrating an MySQL database and verifying the original data using SQLAlchemy
- Led meetings to inform stakeholders about the progress of the project and to solicit feedback

Aperio Software

SOFTWARE ENGINEER *June 2018 - March 2019*

- Used Python metaclasses and Abstract Base Classes to refactor the online data retrieval submodule for sunpy
- Created the foundation for a scientific time-series centric package within astropy
- Provided bug fixes, reviewed code and API design guidance to other developers and contributors to sunpy
- Lead weekly community developer meetings and interacted with the greater scientific Python ecosystem to facilitate cooperation on common objectives

University of the Balearic Islands

POSTDOCTORAL RESEARCHER   *Apr 2016 - June 2018*

- Utilized image and signal analysis techniques to analyze scientific data
- Published peer-reviewed papers in scientific journals
- Gave invited talks at international conferences
- Collaborated with international teams of scientists
- Administered servers and provided software and technical advice
- Reduced uncalibrated imaging data create science ready datasets
- Spent time at observatories collecting observational data

Sheffield International College & University of Sheffield

SEASONAL TUTOR   *Jan 2012 - July 2015*

- Lead groups of students in Physics laboratory classes and Mathematics booster classes
- Taught students how to use Word and Excel in order to write reports and create graph.
- Created and marked Physics exams
- Helped implement a new Python teaching module for University Mathematics students
- Led and assisted tutorial classes in Mathematics, Engineering, Physics and Computer Science
- Assisted in public outreach events
- Was part of the Postgraduate Research Committee ensuring that PhD students were happy with their projects

Honors and Awards

NASA Group Achievement Award

SUNPY DEVELOPMENT TEAM   *2024*

For developing and continually improving free and reliable open-source software that supports NASA missions and the analysis of NASA's vast archives of solar physics data

NASA RHG - Exceptional Achievement for Science

SOLAR DYNAMICS OBSERVATORY TEAM   *2024*

For extraordinary and sustained team efforts that have yielded important scientific results and supported the worldwide heliophysics research community

Voluntary Work

numFOCUS

INFRASTRUCTURE COMMITTEE - SECRETARY   *October 2023 - Present*

- Create detailed notes for monthly meetings
- Work with numFOCUS backed open source projects to solve their infrastructure requests
- Interview potential technical contractors

SunPy Project

FORMER DEPUTY LEAD DEVELOPER, PROJECT CUSTODIAN   *May 2016 - Present*

- Develop new features, expand existing features and finish stale contributions
- Onboard new contributors and actively solve their problems
- Present at conferences on behalf of the SunPy Project
- Package and release the libraries under the SunPy Project
- Maintain the online infrastructure (website, documentation and continuous integration)
- Taught PhD students at summer schools

Google Summer of Code

PROJECT MENTOR & ORGANIZATION ADMIN   *Feb 2014 - Present*

- Guide prospective students through the process of contributing to open source software
- Review applications and interview prospective students
- Organize weekly meetings and set targets for students
- Provide support and code reviews with students
- Oversee activity of all mentors and students to ensure compliance with Google rules
- Ensure that all selected projects pass Google requirements