Yair Franco

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EDUCATION

University of Nevada, Reno — Reno, NV
Ph.D. Geophysics — Expected May 2029
Advisor: Daniel Trugman

University of California, Berkeley — Berkeley, CA
B.A. Geophysics — May 2024

RESEARCH EXPERIENCE

University of California, Berkeley — Berkeley, CA
Cracking the Hayward Fault's Recurrence Interval — Feb. 2024 - Aug. 2024
Advisor: Richard Allen — Lab project

- Reviewed literature on recurrence interval of the Hayward Fault
- Analyzed field observations and methods used to achieve the current scientific consensus for the interval
- Discovered an opportunity to reapply Monte Carlo simulations to analyze recurrence intervals using a method published 15 years prior – a statistically significant time gap
- Developed and optimized code to recreate this method
- Discussed possibilities of applying this method to different faults, and what opportunities for assessing seismic hazard it may open

University of Texas at Austin — Austin, TX
Heartbeat of a Volcano: Detecting Seismicity in the Valles Caldera, New Mexico, Using Machine Learning — May 2023 - Aug. 2023 Internship
Advisors: Nadine Igonin, Akram Mostafanejad

- Processed seismic data collected from nodal geophones installed in the Valles Caldera, New Mexico, in 2019, using Jupyter Notebooks
- Applied computational methods, such as STA/LTA, and machine learning methods, such as those in the Seisbench library, to obtain seismic event time picks
- Visualized waveforms and detected time picks in Python using Obspy and Matplotlib
- Analyzed results in the context of the geology of the region, considering different sources of seismic signals
- Presented results at AGU 2023, and SAGE research symposium in 2024

University of California, Berkeley Berkeley, CA
The Earthquake Traffic Light Oct. 2022 - May 2023
Advisors: Yifang Cheng, Richard Allen Lab project

- Analyzed Northern California Seismic Network data using Jupyter Notebooks
- Designed a system and defined parameters for assessing seismic activity in San Francisco Bay Area using the Gutenberg-Richter Law, following similar existing studies
- Visualized and presented results by graphing and animating in Python using Matplotlib, Cartopy and FFmpeg libraries
- Devised and discussed ideas for how this analysis method can apply to real-time seismic hazard assessment, and further deliberated on its applicability and reliability

PUBLICATIONS & PRESENTATIONS

Posters

1. **Franco, Y**., Frazeur, L., Igonin, N., Mostafanejad, A., Ferguson, J. (2023, December 13). *Heartbeat of a Volcano: Detecting Seismicity in the Valles Caldera, New Mexico, Using Machine Learning* [Poster presentation]. AGU, San Francisco, CA. https://agu.confex.com/agu/fm23/meetingapp.cgi/Paper/1292954.
2. McClelland, E., Bedrosian, P., Peacock, J., Kelley, S., **Franco, Y**., Musila, M. (2023, December 13). *Magnetotelluric Imaging of Melt Storage Beneath the Valles Caldera, New Mexico* [Poster presentation]. AGU, San Francisco, CA. https://agu.confex.com/agu/fm23/meetingapp.cgi/Paper/1303560.

RESEARCH INTERESTS

- Earthquake and tsunami early warning
- Real-time seismology
- Seismic hazard: assessment, forecasting, and mitigation
- Delivery methods for warning systems
- Public perceptions, communication, and education about earthquakes and hazard
- Paleoseismology and earthquake history
- Ground motion simulations and modeling
- Earthquake rupture processes
- Public sourcing and publication of seismic data

SKILLS

- Proficient in Python (Numpy, Matplotlib, Obspy, Cartopy, Seisbench), beginner level in JavaScript and HTML
- Field experience installing geophysical instrumentation (nodal geophone, broadband seismometer, magnetotelluric station, distributed temperature sensing system)
- Familiar with IDEs Jupyter, Atom, and Visual Studio Code
- Basic knowledge of QGIS

- Highly familiar with Microsoft Office and Google Workspace software
- Highly proficient with media editing software (Audacity, FL Studio, Sony Vegas Pro, Adobe Photoshop)
- English (fluent), Spanish (fluent, native), Italian (intermediate, reading and writing)

HONORS & AWARDS

Alum of Undergraduate Research Internships in Seismology 2023

Alum of Summer of Applied Geophysics 2023

Fiat Lux Scholarship Program 2020-2024

- Awarded full ride for 4 years at UC Berkeley