Zachary Ian Espinosa

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EDUCATION

University of Washington, Seattle, WA — Expected Jun 2027
PhD, **Atmospheric Science | Data Science**

Stanford University, Stanford, CA — Jun 2021
M.S. Applied and Engineering Physics, Schools of Arts and Science | Concentration: **Fluid Dynamics**

Stanford University, Stanford, CA — Sep 2020
B.S. Computer Science, School of Engineering | Concentration: **Artificial Intelligence**

FELLOWSHIPS & HONORS

GO-MAP Fellow, Graduate Opportunities and Minority Achievement Program — Sep 2021
ARCS Foundation Scholar, Achievement Rewards for College Scientists — Sep 2021
GEM Graduate Fellow, The GEM National Consortium — Jan 2020

PROFESSIONAL EXPERIENCE

PhD Intern | *Richland, WA* | **Pacific Northwest National Laboratory** — Jun 2021 – Sep 2021

- Studied the main drivers of the seasonal delay of rainfall in the Amazon basin.

Graduate Research Assistant | *Stanford, CA* | **Stanford Earth Systems Science** — Sep 2019 – Sep 2021

- Used machine learning to develop a data-driven single column atmospheric gravity wave parameterization that emulates a physics-based parameterization in a model of an idealized moist atmosphere (MiMA) as part of the Sheshadri group.
- Preparing to submit a manuscript to *Geophysical Research Letters.*

Machine Learning Engineering Intern | *Redwood City, CA* | **UnifyID** — Apr 2020 – Jun 2020

- Worked on an internal machine learning pipeline used for experiments and performance studies. Developed enhanced performance metrics, introduced regression testing, and studied the performance impact of using time-weighted classifications.

Quantum Engineering Intern | *Palo Alto, CA* | **AT&T Foundry** — Jun 2019 – Sep 2019

- Built an open-source python framework for quantum networking (QN) simulations. Publishing a white paper to arXiv.
- Invited to speak at APS March Meeting about implementation of canonical QN protocol: teleportation, superdense coding, etc.

Software Engineering Intern | *Mountain View, CA* | **Smartcar, Inc.** — Jan 2019 – Jun 2019

- Designed, built, and launched two public and one private endpoints for Smartcar API and authored resulting documentation.
- Maintained python, node.js, and java SDKs. Attended USC hackathon as a mentor/sponsor. Contributed to OAuth2 pipeline.

Mobile Software Engineering Intern | *San Francisco, CA* | **OXO, Inc.** — Apr 2018 – Sep 2018

- Built first iteration MVP app for iOS and Android using React Native, Firebase, Heroku, and AWS RDS.

Web and Networking Engineering Intern | *Ashton, ID* | **Henry's Fork Foundation** — Jun 2017 – Sep 2017

- Designed and built a 10 point data collection network using CR300 data loggers by Campbell Scientific to collect and transfer YSI sondes data via FTP to a server running KorEXO software. The published, real time website can be found here.

Summer Internship in Science & Technology | *Batavia, IL* | **Fermi National Accelerator Laboratory** — Jun 2016 – Sep 2016

- Assembled part of a medium-energy horn system used to convert protons to neutrinos for the NuMI experiments.

Student Researcher | *Lemont, IL* | **Argonne National Laboratory** — Sep 2014 – May 2015

LEADERSHIP & EXTRACURRICULA

Teaching Assistant – Emergency Medical Responder (EMR) | *Stanford, CA* — Sep 2020 – Current

- Teaching didactic and practical training for students in the EMR program.

Phoenix Scholars Member | Stanford, CA — Nov 2015 – Nov 2016

- Mentored low income, first generation, and/or minority high school students. Organized annual 200+ attendee meet and greet.

Varsity Track & Field Division I Athlete | *Stanford, CA* — Sep 2015 – Sep 2016

- Nationally ranked pre-collegiate 400m sprinter, 3A IHSA All-State Finalist, AAU Junior Olympics All-American.

Stanford Overseas Studies Program Participant | *Santiago, Chile* — Sep 2018 – Dec 2018

Stanford Overseas Seminar Program Participant | *Krakow, Poland* — Sep 2017

PRESENTATIONS

Speaker | **EGU General Assembly** | Machine Learning Emulation of Parameterized Gravity Wave Momentum — Apr 2021
Speaker | **AGU Fall meeting** | A Data-Driven, Single column Gravity Wave Parameterization in an Idealized Model — Dec 2020
Speaker | **MSCAR** | A Data-Driven, Single column Gravity Wave Parameterization in an Idealized Model — Sep 2020
Speaker | **CalGFD** | A Data-Driven, Single column Gravity Wave Parameterization in an Idealized Model — Aug 2020
Poster | **APS March Meeting (Canceled)** | netQuil: A playground for quantum networking simulations — Mar 2020

Poster | **Stanford Deep Learning Poster Session** | Distracted Driver Detection Jun 2018

Poster | **Stanford Artificial Intelligence Post Session** | Tracking Schistosomiasis with Computer Vision Mar 2018

ADDITIONAL INFORMATION

Tooling: Julia, Python, Tensorflow, PyTorch, Fortran, C++, C, Node.js, Express, Javascript, React Native, AWS, Postgres, SQL

Computer Experience: Computer vision, Deep Learning, Reinforcement Learning, API, DB and server development

Certifications: PCA Climbing Instructor, EMT-B, Open Water Scuba Diver, Black Belt Shotokan Karate