

ALEX EFTIMIADIS

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WORK EXPERIENCE

Penguin Random House

Applied ML Scientist

Remote

Nov 2022 - Present

- Building out systems for Ad generation and monitoring

FINRA

Lead Data Scientist

Remote

June 2019 - Nov 2022

- Lead deployment of NLP models in production using Docker and Lambda on AWS, reducing costs by 80%.
- Developed and open sourced toolkit based on R&D efforts for validating and monitoring machine learning models <https://finraos.github.io/model-validation-toolkit/>. Presented at ODSC East 2022.
- Mentored junior data scientists and lead regular data science related sessions and workshops.
- Developed supervised and unsupervised models to identify insider trading (xgboost; 96% AUC), market manipulation (dbscan), fraud (bayesian analysis), and triage external communication (xgboost, sklearn, BERT).
- Lead R&D efforts on interpretable machine learning, model validation and monitoring, and various ensemble models.
- Gave internal talks on: software engineering for data scientists, countering sample bias, measuring model drift, thresholding, normalizing flows.
- Developed and conducted technical interview process and brought on 7 data scientists.
- Promoted twice in three years

Deepsig

Machine Learning Engineer

Arlington, VA

January 2019 - March 2019

- Designed and implemented deep learning based signal detector and classifier.
- Compared and reported on deep learning approaches benchmarked against classical clustering algorithms for signal identification and classification.
- Gave talk on semi-supervised learning.

Catalist LLC

Analytics Engineer

Washington DC

February 2018 - January 2019

- Optimized, parallelized, and deployed NLP Keras model.
- Wrote SQL parser that refactored over one million lines of legacy SQL scripts.
- Designed and wrote data processing pipeline for election results as they became available the night of the election.
- Wrote internal technical guides on parallel processing.
- Contributed code to Keras (fixed tokenizer).

Comsol

Developer

Burlington, MA

February 2016 - May 2017

- Researched models and techniques to simulate physical phenomena of interest to engineers and scientists.
- Implemented and documented algorithms used for numerical simulations and user interfaces in Java.
- Helped customers create and optimize simulations.

University of Maryland Baltimore County

Research Assistant

Catonsville, MD

June 2014 - September 2014

- Used dynamic programming to reduce run time of quantum computing simulation from five days to 50 minutes.

Freelance Software Engineer

March 2013 - Present

- American Dental Association Foundation - performed data visualization and image processing with Python, named second author in publication summarizing results.
- Tor - Wrote code to tunnel citizens of countries with internet censorship to uncensored internet via Google Chat and Tor.

University of Maryland

Research Assistant

College Park, MD

January 2011 - August 2012

- Band structure calculations and simulations of carbon nanotubes using Python.

NASA

Intern

Greenbelt, MD

June 2010 - August 2010

- Developed and ran optics simulations to debug faulty depolarizer.

Army Research Laboratory

Intern

Adelphi, MD

June 2009 - August 2009

- Researched physics of quantum well infrared photodetectors.

SKILLS

Programming Languages:	Python, Bash, SQL
Frameworks:	Jax/Pytorch, Numpy/Scipy, Cython, Pandas, Scikit-learn
Tools:	Git, Vim, AWS, Jupyter, Plotly, Docker

PROJECTS

Tlang (March 2022) Python

<https://github.com/aeftimia/tlang>

Experimental transpiler generator built on composable context sensitive parser generators

Model Validation Toolkit (Dec 2021) Python

<https://github.com/FINRAOS/model-validation-toolkit>

Open sourced internal project at FINRA for model validation and monitoring

Discrete Exterior Calculus Framework (May 2014) Python, Cython, Cuda

<https://github.com/aeftimia/kahler>

Parallelized and generalized the discrete exterior calculus (similar to finite elements) framework PyDEC.

Hexchat (July 2013) Python

<https://github.com/aeftimia/hexchat>

Wrote internet censorship circumvention software for Tor. Tunnels TCP connections over arbitrary numbers of XMPP chatlines-circumventing bandwidth limitations imposed by the hosts.

AWARDS AND PUBLICATIONS

Superhost

Airbnb

Jan 2023

First Place in APA MVP 8 Ball Tournament

American Pool Association

Won Amatature 8 Ball Tournament

Aug 2022

First Place in Age Group (Ashville Triathlon)

Ashville Traithlon

Won age group in sprint triathlon

July 2022

Introducing the Model Validation Toolkit

Open Source Data Science (ODSC) East 2022

Gave talk at ODSC East introducing open source toolkit developed internally at FINRA

April 2022

Enhancing the Three-Dimensional Structure of Adherent Gingival Fibroblasts and Spheroids via a Fibrous Protein-Based Hydrogel Cover.

Cells Tissues Organs

Published with biologists at American Dental Association Foundation.

August 2016

Kahler: An Implementation of Discrete Exterior Calculus on Hermitian Manifolds

<http://arxiv.org/abs/1405.7879>

Independent research and implementation of finite elements framework.

May 2014

A New Perspective on Numerical Trigonometric Approximations

Montgomery College Student

Journal of Science and Mathematics (no longer published)

Published an algorithm I developed in middle school that calculates trigonometric functions

https://aeftimia.github.io/files/first_paper.pdf

January, 2009

EDUCATION

UMBC

Catonsville, MD

BS Physics (Minor in Mathematics)

2013 - 2015