Alex Eftimiades

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Work Experience

Penguin Random House Remote
Applied ML Scientist Nov 2022 - Present

- Built out Facebook and Instagram ad generation and monitoring pipeline using Python and Kubernetes.
- Presented approach and A/B testing techniques at Data Science Salon

FINRA Remote
Lead Data Scientist 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 Arlington, VA
Machine Learning Engineer 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 Washington DC
Analytics Engineer 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 Burlington, MA
Developer 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 Catonsville, MD
Research Assistant 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 College Park, MD
Research Assistant January 2011 - August 2012

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

NASA Greenbelt, MD
Intern June 2010 - August 2010

- Developed and ran optics simulations to debug faulty depolarizer.

Army Research Laboratory Adelphi, MD
Intern 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, Kubernetes, 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

Advertising at Scale Data Science Salon
Presented work on automated advertising and A/B testing at Data Science Salon June 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

Education

UMBC Catonsville, MD
BS Physics (Minor in Mathematics) 2013 - 2015