

Alireza Havaeishamsabadi

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Education

University of California, Davis

B.S. Computer Science & Engineering, B.A. Economics, Minor in Mathematics. GPA: 4.0/4.0

Davis, CA

Graduated: 06/2023

- Relevant Coursework: Machine Learning (Stanford), Linear Algebra, Probability and Statistics, Data Science, Numerical Analysis, Stochastic Processes, Algorithms, Operating Systems, Computer Vision, Programming Languages, GANs

National Organization for Development of Exceptional Talents (Sampad)

Isfahan, Iran

Experience

Jane Street Capital

Quantitative Trading Intern

New York, NY

05/2023-08/2023

- Designed, trained, and evaluated a novel deep learning architecture to model options volatility returns.
- Applied priors-based regression and clustering techniques to model Indian ETF returns during closed hours.
- Achieved 1st place in intern ETF modeling competition and 3rd place in firm-wide [Figgie](#) tournament (1st among interns).

Snap Inc.

Applied Research Intern, Deep Learning

San Francisco, CA

01/2023-05/2023

- Implemented and validated state-of-the-art unsupervised deep learning models, [OmniAnomaly](#) and [USAD](#), to identify anomalies in live Snapchat user engagement data. Employed Fourier Transform to enforce sinusoidal data priors in latent space.
- Achieved model classification accuracy of 97%, a 12% improvement over the previous algorithm, and integrated model into Snap's daily real-time monitoring mechanisms.

Cohere

Machine Learning Engineering Intern (Mentored by Dr. Alex Wang, Manager: Dr. Nils Reimers)

Palo Alto, CA

09/2022-12/2022

- Created complete active learning pipeline for content moderation based on [OpenAI's moderation approach](#), and trained model with 6B parameters with results surpassing [Perspective](#) and OpenAI moderation services.
- Developed definitions for moderation categories and created labeling instructions for [Surge AI](#) workflow.
- Enhanced efficiency of labelling a vast corpus of unlabeled data with active learning, prioritizing examples predicted by the model to belong to rare classes to be labeled for the next training epoch.
- Explored the use of synthetic training data via generation methods such as data templating and zero-shot and few-shot learning.
- Deployed model internally which is now used to improve the safety and unbiasedness of Cohere's generative LLMs.

Susquehanna International Group (SIG)

Quantitative Trading Intern

Bala Cynwyd, PA

06/2022-08/2022

- Studied options theory, developed trading strategies, and participated in competitive stock options trading simulations.
- Shadowed traders on global index desk and modeled price patterns using time-series data.

NVIDIA

Machine Learning Research Intern

Santa Clara, CA

08/2021-12/2021

- With guidance from Dr. Ting-Chun Wang, designed and implemented a video super resolution model that achieved peak signal-to-noise ratio (PSNR) of 30.6, a 4.5 point increase compared to previous models, and is currently deployed in the VideoFX SDK.
- The novel architecture includes an additional U-net discriminator to ensure temporal coherence of the generated video.
- Boosted model latency by 4x using Reduced Mixed Precision for production deployment with TensorRT.

UC Davis CS

Machine Learning Research Assistant (supervised by Professor [Zubair Shafiq](#))

Palo Alto, CA

04/2021-08/2021

- Wrote generalized end-to-end pipeline in PyTorch to fine-tune natural language processing (NLP) models for political ideology and hate speech classification using 10K+ social media posts, including preprocessing and tokenization pipeline for scraped data.
- Achieved F-scores of 92% on ideology classification and 83% on offensive language detection through experimentation with BERT and XLNet, surpassing [state-of-the-art results](#) in offensive language detection irrespective of the platform.

Skills and Interests

Personal Project: BERT for Persian/Farsi

06/2021-12/2021

- Cleaned, normalized, and segmented over 50GB of scraped Persian text by pre-tokenizing special characters, detecting and removing non-Persian text, cleaning punctuation, and more. Labeled scraped tweets for offensive language detection.
- Built custom BERT in TF2.0 with graph execution support and trained on **GCP TPUs** for 22 days (10 M iterations).
- Achieved model F-scores of 97% for offensive language and 91% for toxicity, **surpassing state-of-the-art models** (XLNet, Multilingual BERT, and ParsBERT) **by over 20 percentage points**.

Languages and Libraries: Python (PyTorch, PyTorch3D, TensorFlow, Keras, Jax, NumPy, Pandas, Scikit-learn, NLTK, Django), C++, Java, JavaScript (React), CUDA, MATLAB, HTML, CSS

Awards: Advanced to the final round of the 2015 Iranian National Olympiad of Informatics