Andy **Shen**

Computer Science Undergrad · Software Engineer · Machine Learning Researcher

(+1) 310-694-4853 | andyshen55@ucla.edu | andyshen55.github.io/thantzinoo-andy | andyshen55 | thantzinoo-andy

Education

University of California, Los Angeles (*UCLA*) ***Expected***: *June 2023*

B.S. in Computer Science ***GPA***: *3.77 / 4.0*

- Relevant Coursework: Data Structures, Algorithms and Complexity, Software Engineering, Computer Architecture, Operating Systems, Artificial Intelligence, Machine Learning, Discrete Math, Multivariate Calculus, Differential Equations, Linear Algebra, Probability Theory
- Activities: DataRes @ UCLA, exploretech.la Design, Bruin Visual Arts Club, Intramural Volleyball and Basketball
- Awards: Dean's Honor List (*Winter 2019, Spring 2020*), Best Machine Learning Hack (*HOTH6*)

Work Experience

Xia Yang Lab at UCLA *Jan. 2021 - Present*

Bioinformatics Researcher

- Researched deconvolution methods to infer cell-type specific gene expression from bulk RNA-seq data
- Integrated logging callbacks and gene/sample correlation metrics into the training pipeline of our deep learning model
- Implemented Bayesian neural networks using Tensorflow Probability to incorporate uncertainty estimates into predictions
- Fine-tuned hyperparameters via distributed grid search on the Hoffman2 Computing Cluster, improving deconvolution to 0.01 MSE

PARISLab at UCLA *July 2020 - Oct. 2020*

Machine Learning Researcher

- Applied machine learning techniques on glass datasets to predict atomic structure and material properties
- Researched explainable neural network architectures for extracting symbolic relationships from structured data
- Implemented additive index models in PyTorch to recover generative mechanisms for example datasets with < 0.07 RMSE

UCLA Olga Radko Endowed Math Circle *April 2020 - Present*

Undergraduate Instructor

- Guided mathematically gifted 8^{th} graders through redesigned topics from the UCLA undergraduate math curriculum
- Simplified concepts, such as finite automata and graph theory, to match the cognitive levels of individual students
- Automated the creation of virtual whiteboards as a teaching aid using Selenium

Selected Projects

Bobby FishAI Chess Engine (*Python, Javascript, C*) *Dec. 2020*

- Embedded a pre-trained neural network static evaluation function (NNUE) into a python-chess engine
- Profiled various multi-threaded heuristics, such as vanilla minimax, alpha-beta pruning, Monte Carlo tree search, etc
- Implemented Opening Book and Syzygy Endgame probing to increase engine playing strength to 2150 ELO at search depth 6
- Connected Flask backend to a Javascript GUI via REST APIs, and hosted a playable demo at: bobbyfishai.pythonanywhere.com

GPT Ghost Writer (*Python: Tensorflow, Javascript: React*) *Dec. 2020*

- Preprocessed and tokenized raw text data from authors with distinctive prose, such as: Franz Kafka, Ted Chiang, etc
- Applied transfer learning techniques to fine-tune GPT-2, in order to generate text in the style of different authors
- Compiled generated "quotes" into a Firebase backend, enabling efficient querying by author

LA Hacks 2019, Fake News Detection (*Python*) *March 2019*

- Leveraged Taboola's API to periodically scrape and sort news articles by trending categories
- Applied sentiment analysis on grouped articles to determine semantic agreement between headlines and body texts
- Received the 'Best Use of Taboola Trends API' award, for our one vs. all fake news detection algorithm

Genome Matcher (*C++*) *Feb. 2019*

- Implemented a Trie-based DNA library, capable of storing and flexibly matching genomes up to 3,000,000 bases long
- Developed a recursive linear time search function for matching exact and polymorphic nucleotide sequences

Skills

Programming Python, C++, C, SQL, Javascript, Java, HTML5, CSS/SCSS, Bash, x86 Assembly, Octave

Technologies Tensorflow, PyTorch, SKLearn, NumPy, Pandas, React.js, Node.js, Microsoft Azure, Git, Figma, Photoshop

ML Models Linear/Logistic Regression, SVM, Decision Tree, Random Forest, CNN, GAN, RNN, LSTM, Transformer

Edited: August 15, 2021