YUFAN ZHANG

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EDUCATION

Cornell Tech (Cornell University), New York, NY — Aug 2023 – May 2025
M.S. in Computer and Information Science | GPA: 4.0/4.0 | Merit Scholarship Recipient
- Relevant Coursework: Machine Learning Engineering, Natural Language Processing, Computer Vision, Big Data Integration and Processing
- Certificate: Machine Learning Engineering for Production (MLOps) by DeepLearning.AI (Completed November 2023)

Duke University / Duke Kunshan University, Kunshan, China — Aug 2019 – May 2023
B.S. in Data Science | GPA: 3.7/4.0 | Dean's Lists
- Relevant Coursework: Principles of Machine Learning, Cloud Computing, Databases, Algorithms and Data Structures, Probability and Statistics

TECHNICAL SKILLS

Coding Languages:	Python, SQL, Java, C++, Matlab, R, HTML/CSS/JavaScript
Machine Learning & AI:	PyTorch, TensorFlow, Keras, Scikit-Learn, OpenCV, NLTK
Data Handling & Analysis:	Pandas, NumPy, Spark, Matplotlib, Plotly, Tableau, PowerBI, AirFlow, PostgreSQL, MySQL, MongoDB
Miscellaneous Development Skills:	Git, Docker, Jupyter Notebooks, Linux, AWS, GCP, ArgoCD, Firebase, Kubernetes, Jira

EXPERIENCE

eBay Inc. | Data Platform Product Manager Intern, Shanghai, China — Mar 2023 – Jun 2023
- Leveraged the knowledge of Big Data technology, including **Apache Kafka** and **Flink**, to achieve feature extensions and performance optimization of eBay's internal data streaming platform, *Rheos*, resulting in **10** new use case onboardings and a **13%** user satisfaction score improvement.
- Executed a user feedback survey and derived actionable insights for the engineering team by conducting statistical analysis with **Python** and data visualization with **PowerBI**, resulting in **4** new data storage connectors' integration with the platform, enhancing the platform's data accessibility.

Duke Kunshan University | Deep Learning Research Intern, Kunshan, China — Mar 2022 – Oct 2022
- Designed an end-to-end **GAN**-based generative model with **PyTorch**, tackling the challenge of cross-language font style transfer.
- Adopted the **Vision Transformer (ViT)** mechanism to capture both the local and global font features and an adaptive **skip connection** mechanism to improve content fidelity, evidenced by a **14%** and **12%** improvement in SSIM respectively through **ablation studies**.
- Conducted extensive experiments on a multilingual dataset, demonstrating the model's superior performance in generating stylized fonts for unseen languages with quantitative evaluations showing **17.3%** SSIM and **27.4%** mFID improvement over the previous SOTA models.
- **First-authored** a research paper at the top multimedia computing conference, **ACM Multimedia 2022**; received **3 citations**. [Paper] [GitHub]

PROJECTS

Ads Click-Through-Rate (CTR) Prediction, (Python, SQL) — [GitHub] Winter 2023
- Led a CTR prediction project on a dataset of **2.14** billion ad-click records with **Google Cloud Platform (GCP)**.
- Utilized **GCP BigQuery** for scalable data storage and preprocessing, leveraging **BigQuery**'s **SQL** capabilities to perform data cleaning steps.
- Engineered predictive features using one-hot encoding, normalization, and PCA, boosting the model's AUC by **18%** compared to baseline models.
- Implemented and evaluated multiple machine learning algorithms (Random Forest, Gradient Boosting, and Neural Networks) using **Spark MLlib** on **GCP Dataproc**, optimizing for precision and recall; the Gradient Boosting model outperformed others with an AUC of **0.52**.
- Implemented and tuned **deep learning** models with **TensorFlow**, including **Deep FM** and **DIN** models, increasing AUC to **0.68**.

miniTorch: Python Re-implementation of the PyTorch API, (Python, Numba) — [GitHub] [Website] Fall 2023
- Engineered a **Python**-based alternative library to the **Torch** API, resulting in **100%** compatibility with native **PyTorch** code.
- Architected a custom Tensor data structure pivotal for deep learning model training and evaluation, supporting tensor backend operations including **broadcasting**, mathematical operation **overloads**, **auto-differentiation**, and **backpropagation**.
- Achieved a **10x** speedup in training by implementing parallel computations with **Numba JIT** for essential tensor operations (map, zip & reduce).
- Optimized matrix multiplication for GPU with **Numba CUDA**, achieving a **3x** speedup compared to the CPU optimization.

Instagram-style Image Caption Generator, (Python, TensorFlow) — [GitHub] Fall 2023
- Implemented an Instagram-style image-to-text generative model using a pre-trained **ViT** encoder and **GPT-2**, a pre-trained **large language model (LLM)**, as the decoder with **TensorFlow** and **Hugging Face**'s **Transformers**, achieving a **150%** BLEU score improvement over the baseline.
- Built two baseline models adopting the **CNN-LSTM** architecture and the **CNN-Transformer** architecture respectively.
- Fine-tuned the final model on a curated Instagram dataset, improving its relevance for social media contexts by **51%** in BLEU score.

COVID-19 Risk Assessment Pipeline, (Python, Apache Airflow) — [GitHub] Spring 2022
- Engineered an end-to-end ML pipeline using **Apache Airflow** for COVID-19 risk assessment, managing DAGs for ETL and ML workflows.
- Conducted k-fold cross-validation training with **Python** and **Scikit-Learn**, focusing on predictive accuracy for new death cases.
- Automated daily data fetching of COVID-19 statistics, storing in **AWS**-hosted **PostgreSQL**, ensuring consistent and up-to-date data availability.
- Achieved a **34%** improvement in model accuracy over 1 year through continuous monitoring and optimization of the model performance.
- Deployed daily-updated models using **Docker** on **AWS EC2**; developed **Flask**-based RESTful APIs on **Heroku** for model accessibility.

PUBLICATIONS

MF-Net: A Novel Few-Shot Stylized Multilingual Font Generation Method (3 citations) — DOI: 10.1145/3503161.3548414
Yufan Zhang, Junkai Man, Peng Sun* — ACM Multimedia 2022