TENGDA WANG

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Education

Carnegie Mellon University — ***Pittsburgh, PA***

Master of Computational Data Science (System Concentration), ***3.89/4.0*** *GPA* — *Dec 2024*

- **Key Courses**: Database Systems, Distributed Systems, Advanced Cloud Computing, Deep Learning Systems, Parallel Architecture And Programming, Computer Systems, Search Engines, Machine Learning, Advanced NLP (PhD).

National University of Singapore — ***Singapore***

Bachelor of Science (Honors) in Business Analytics, ***4.87/5.0*** *GPA* — *May 2021*

Skills

Programming Languages: Python, Java, Scala, C, C++, Scala, Go, Javascript (Angular/Vue), Bash, SQL
Data: Apache Spark, Apache Kafka, Hadoop MapReduce, Apache Airflow, Apache Hive, HDFS, Redis
Machine Learning/Data Science: PyTorch, TensorFlow, Scikit-Learn, Keras, Tableau
DevOps/Cloud: Docker, Kubernetes, Terraform, AWS (EC2, S3, Lambda, CWL, SageMaker), GCP, Protobuf, Linux, Git

Professional Experience

TikTok — ***Bellevue, WA***

Machine Learning Engineer Intern, E-commerce Recommendation Team — *Jun 2024 - Aug 2024*

- Developed and iterated on multiple **collaborative-filtering** based algorithms in **HiveSQL** and **C++** for efficient product **recall** in a large-scale recommendation system (TikTok Shop).
- Implemented and trained two-tower **embedding recall models** optimizing click-through and conversion, with a focus on feature engineering, model structure, and data pipeline. Models were deployed online and brought positive GMV impact.

Shopee — ***Singapore***

Software Engineer in Machine Learning, Search Team — *Sept 2021 - Apr 2023*

- **Query-Category Relevance:** Improved **search quality** for million users by boosting relevant items in the search result. Achieved 92.4% offline training AUC, increased CTR by 3.71% (A/B test) and decreased bad case rate by 20.21% online.
- Architected, implemented, and maintained an **end-to-end distributed pipeline** made up of a large data warehouse, an ETL feature-extraction pipeline, a model training and inference module, and a deployment layer utilizing **Redis** cache, that handles up to 100 TB data with thousands QPS.
- Pre-trained monolingual **BERT** models using a **masked language task** on item descriptions in 8 different languages, which improved performance of downstream tasks (NER, query rewrite etc) in both **feature-based** and **fine-tuning** fashion.
- Collaborated with 5+ Product Managers and Product Ops across 8 countries to generate 10 million rows of human-labeled data for model training, and increased model offline metrics by 44.2%.

Bank of America Merrill Lynch — ***Singapore***

Software Engineer Intern, Global Markets Tech Team — *Jun 2020 - Aug 2020*

- Formulated workflows and created multiple **full-stack web applications** including frontend (**AngularJS**), backend (**Scala**), and unit-testing to help clients manage portfolios. Worked closely with product teams to ensure a user-friendly **UI/UX**.

Selected Projects

- BusTub (2024): Extended the functionality of a RDBMS by implementing a buffer pool manager with LRU-K eviction policy, an extendible hash index and a B+ tree index supporting concurrent operations, a query execution engine, and a multi-version concurrency control protocol for transactions. (**C++**)
- Distributed Proxy (2024): Designed and coded a distributed proxy server that supports whole-file caching and LRU eviction. The proxy uses Java RMI as the underlying RPC protocol, and leverages check-on-use techniques to ensure cache consistency in open-close session semantics similar to the Andrew File System (AFS). **(Java)**
- System Labs (2023), Malloc Lab: wrote a segregated-list version of dynamic memory allocator supporting malloc and free to maximize memory utilization and throughput; Shell Lab: created a process-based unix shell with job control , I/O redirection, and signal handling. (**C**)
- Bachelor Thesis (2021), Studied **neural abstractive summarization** techniques (e.g. **Transformers**, **Seq2Seq models**) to automatically generate hospital discharge summaries in electronic health records (**Pytorch, Tensorflow**)
- NUS Internship Search (2019), Developed and deployed a visualization web application to provide graphical and analytical insights for students to find internships **(Vue.js, HTML/CSS, Node.JS, Firebase, Highcharts, Travis CI, Heroku)**