TENGDA WANG

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Education

Carnegie Mellon University **Pittsburgh, PA**

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

- **Key Courses**: Database Systems, Distributed Systems, Cloud Computing, Deep Learning Systems, Search Engines

National University of Singapore **Singapore**

B.Sc. (Honors) in Business Analytics, ***4.87/5.0*** *GPA* *May 2021*

- **Key Courses:** Natural Language Processing, Web Development, Software Engineering, Computer Organization, Network

Skills

- **Programming Languages**: Python, Java, Scala, C, C++, Scala, Go, Javascript (Angular/Vue/React), Bash, SQL
- **Data**: Apache Spark, Apache Kafka, MapReduce, Apache Airflow, Apache Hive, MongoDB, ClickHouse, 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 *May 2024 - Aug 2024*

- Developed and deployed collaborative-filtering based algorithms in HiveSQL and C++ for efficient product recall in a large-scale recommendation system (TikTok Shop).
- Designed and trained two-tower embedding retrieval model optimizing CTR and CVR, with a focus on feature engineering, data pipelines, and model structures. The model was deployed online and brought positive GMV impact.

Shopee **Singapore**

Software Engineer in Machine Learning, Search Team *Sept 2021 - April 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 system 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.
- Worked collaboratively with 5+ Product Managers and Product Ops across 8 countries to generate 10 million rows of human-labeled data for model training, which significantly increased model offline metrics by 44.2%.

Bank of America Merrill Lynch **Singapore**

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

- Designed workflows and created multiple full-stack web applications including frontend, backend, and unit-testing to help clients manage portfolios. Worked closely with the product side to ensure a well-designed 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 that supports malloc and free to maximize memory utilization and throughput; Shell Lab: developed a process-based unix shell that supports job control , I/O redirection, and signal handling. (**C**)
- Bachelor Thesis (2021), Studied the use of 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)**