Haozhen Shen

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Skills

- **Development:** Python | C | C++ | Java | JavaScript | React | TypeScript | Node | Bootstrap | Tailwindcss | Express | Next | MongoDB | PostgreSQL | Kafka | Redis | Docker | CI/CD | Jenkins | Git | Bitbucket | Jira | Unit Testing | OOP | Distributed Systems
- **Machine Learning:** R | NumPy | Pandas | scikit-learn | Prophet | XGBoost | CatBoost | LightGBM | Pytorch | Pytorch Lightning | Tensorflow | Keras | Hugging Face | Transformers | VAE | EBM | W&B | Neptune | MLFlow | W&B | ONNX | Kedro | Airflow | Spark | Ray
- **Platform:** AWS | Databricks | Vercel

Experience

Machine Learning Scientist — **BluWave-ai** — *Ottawa, ON, Canada* — **05/2022 - Current**

- Built an end-to-end machine learning pipeline for time series forecasting of electricity load data using **Kinesis Data Streams, Lambda, Ray, Kedro, Airflow, MLFlow, Tensorflow, Pytorch,** and **LightGBM** resulting in a 22% improvement in performance (MAE) and an 80% reduction in inference time compared to the previous method.
- Involved in the entire life cycle of forecasting products. From **ETL** data from various sources, conducting statistical analysis on data, model development, testing, configuring metrics, alarms, dashboards (**Grafana**), and deployment.
- Improved the backtesting infrastructure for time series forecasting projects, accelerating model development and testing.
- Took the initiative to refactor existing machine learning pipelines into modularized components leveraging Kedro accelerating model development and lowering the cost of maintenance.

Research Assistant — **University of Toronto** — *Toronto, ON, Canada* — **02/2022 - 06/2022**

- Implemented function approximators to solve stochastic control problems using deep learning. The control problem models the Renewable Energy Credit market in the principal-agent mean-field game setting.

Data Engineer, Intern — **CRRC Academy** — *Beijing, China* — **04/2019 - 08/2019**

- CRRC is the world's largest rolling stock manufacturing company.
- Joined the algorithm team dedicated to analyzing the vehicle's operation condition for rail networks.
- Accelerated data preprocessing pipelines using MATLAB and Python which increased preprocessing speed by 33%.
- Implemented an end-to-end data pipeline for an LSTM-CNN classification algorithm to validate and identify potential vehicle failures.
- Developed a threshold analyzing algorithm, which helps distinguish valid data from noise caused by a sensor failure.

Software Engineer, Intern — **Shanda Interactive Entertainment** — *Shenzhen, China* — **04/2018 - 08/2018**

- Worked with the product management team and developers to build application monitoring player data.
- Implemented an internal A/B testing framework in addition to the player data monitoring system.
- Addressed various bugs on existing websites and applications in production that have been present for years.
- Optimized alerting systems when receiving a high volume of player-reported bugs.

Education

Master of Science — **University of Toronto (St. George)** — *Toronto, ON, Canada* — **09/2021 - 04/2022**

- Statistics, Focus on Generative Modeling, Probabilistic Models, and Statistical Learning Theory.

Bachelor of Science — **University of Toronto (St. George)** — *Toronto, ON, Canada* — **09/2016 - 04/2021**

- Specialist, Computer Science, Machine Learning path.
- Specialist, Applied Mathematics, Probability and Statistics path.

Projects

MarketSentinel (Full Stack Machine Learning, NLP)

- A stock market sentiment visualization website. A DistilRoberta model from **Huggingface** and fine-tuned on financial news is used to perform text sentiment classification for news data leveraging the **Huggingface** Inference API. GitHub Link
- **Mini Redis**: Build a simplified version of Redis in C++ that handles multiple concurrent clients with Echo, Set, and Get commands.
- **Feedback Prize - NLP**: Fine-tuning Deberta models to assess the language proficiency of 8th-12th grade English Language Learners.
- **Adaptive Noise Score Network**: Designed a Score Based Generative Model, inspired by Adaptive MCMC techniques.
- **Energy-Based VAE**: Image generation by jointly training VAEs and Energy Based models (EBMs) through Contrastive divergence.

Others

- **National second-level athlete** in the game of GO.
- **First Place**: Ranked first place in the three-dan promotion competition of the game of GO in, Shenzhen, China.