Boping Song

New York, NYC | +1 3017427088 | songboping2000@outlook.com

EDUCATION

***Master of Science in Applied Analytics*, Columbia University** *Dec 2025*

- GPA: 4.033/4.33 (A^+=4.33 scale)
- Core courses: Managing Data, Data Modeling, Strategy and Analytics, Analytics for Business Operations, Applied Deep Learning and Machine Learning, Applied Analytics Frameworks and Methods, Blockchain, Cryptocurrency and Analytics.

***Bachelor of Science in Operations and Supply Chain Management*, George Mason University** *Dec 2023*

- GPA: 3.80/4.00 | Dean's List (Fall '21, Spring '22, Summer '22, Fall '22, Spring '23, Summer '23, Fall'23)
- Core courses: Business Analytics I & II, Database Management Systems, Programming for Analytics.

PROJECTS

Climate Change Prediction with LSTM and Attention Models *Fall 2025*

- Designed and benchmarked 21 deep learning models (spanning LSTM, Bi-LSTM, and Transformer-based Attention architectures) to forecast global and continent-level land temperatures using the Berkeley Earth dataset (>500k monthly observations).
- Built an end-to-end data preprocessing pipeline in Python (Pandas, NumPy, Scikit-learn) to handle temporal gaps and non-stationarity in 270 years of historical data, implementing geographic harmonization and interpolation to ensure data reliability for long-horizon forecasting.
- Demonstrated that Bi-LSTM architectures outperform standard LSTMs in regional tasks by effectively capturing localized seasonality and bi-directional temporal dependencies, reducing RMSE/MAE by an order of magnitude.
- Deployed model inference pipelines using PyTorch and visualized spatial-temporal prediction results with Matplotlib/Seaborn, enabling interpretable presentation of climate trend forecasts.

Measuring the Value of Museum Events *Fall 2025*

- Analyzed 10+ years of multi-source institutional data (ticketing, retail, event calendar, donations, weather) using Apache Airflow to automate ETL pipelines, integrating >188k visitor donation records and multi-year revenue data into a PostgreSQL data warehouse.
- Performed large-scale data cleaning & feature engineering in Python(Pandas, Dask), resolving cross-system inconsistencies and building unified datasets to support robust modeling.
- Developed a stacked ensemble model combining OLS, XGBoost, and LightGBM (hyperparameter tuning via Optuna), achieving R^2 = 0.52–0.63 to quantify event-driven revenue uplift while controlling for confounding variables (seasonality, visitor flow, weather).
- Identified actionable insights: Mixed Events generate ~$4.9K daily ticket uplift, +9% in store sales, and event-day visitors donate ~$63 more on average.

Modeling and Optimization of US Airport Flight Delay Management *Summer 2025*

- Built discrete-event simulation models in Python (SimPy) using U.S. Department of Transportation flight data; compared gate and ground crew configurations; identified gate capacity as the main bottleneck.
- Demonstrated how simulation can reduced the average post-landing waiting time for gate or ground service availability from 11.5 to 1.5 minutes.
- Implemented a Flask-based web interface to allow operations teams to adjust input parameters (peak-hour flight volume, crew shift lengths) and visualize delay reduction outcomes in real time.

Can Bitcoin Be Used as an Inflation Hedge Like Gold? *Spring 2025*

- Led a team to analyze whether Bitcoin exhibits similar hedging properties as gold during market crises.
- Applied Time Series Analysis (ARIMA), K-means Clustering, and Apriori algorithm for association rule mining on 2013–2025 price and volume data.
- Concluded that Bitcoin lacks consistent safe-haven behavior, offering insights for portfolio risk optimization.

Managing Financial Data with Hybrid Systems *Spring 2025*

- Designed a hybrid data management system integrating PostgreSQL and MongoDB for 15M+ stock records.
- Optimized query performance by 25% through PostgreSQL index tuning (B-tree) and reduced storage by ~25% via Spark compression.
- Led a 3-person team to build end-to-end ETL pipelines using Apache Spark for real-time data ingestion and monitor system performance via Grafana dashboards.

A Decentralized Game Asset Trading and Options Platform *Spring 2025*

- Developed decentralized trading system allowing NFT and fNFT trading with embedded options.
- Coded smart contracts in Solidity, deployed via Remix + MetaMask using ERC-20 and ERC-1155 standards.
- Proposed novel fNFT finance model for virtual assets, showing blockchain's potential in game economies.

Predicting Clicks *Fall 2024*

- Participated in a Kaggle competition to predict ad click-through rates (CTR) based on ad quality, relevance, audience type, and content.
- Explored multiple models including Linear Regression, Pruned Decision Tree, LightGBM, and XGBoost; implemented cross-validation to prevent overfitting.
- Built high-cardinality categorical features using target encoding and embeddings to avoid dimensionality explosion; reduced feature set by 30% via mutual information and L1 regularization without accuracy loss.
- Achieved 21st ranking (out of 387 competitors), balancing prediction accuracy and model interpretability through iterative experimentation.

INTERNSHIPS

Institutional Business Intern, AEGON-INDUSTRIAL Fund Management Co., Ltd. *Mar - May 2024*

- Participated in analyzing financial markets, industry trends and business models; wrote industry reports, company research reports to support investment decisions.
- Organized meetings, wrote meeting minutes and provided customized investment advice and financial services to institutional clients(e.g. funds, insurance companies, etc.)

Administrative Office Assistant, Jinan Puji Hospital, Shandong, China *June – July 2023*

- Conducted comprehensive surveys to gather data on essential hospital functional modules.
- Contributed to the development of drug distribution software using ExtendSim for simulation and modeling.

Medical Insurance Intern, ICBC-AXA Assurance Co. Ltd., Shanghai, China *May – Aug 2022*

- Supported the operations department with document management, handling correspondences, coordinating meetings, and other general administrative tasks.
- Played a key role in streamlining customer communications by organizing and analyzing data, using Excel to manage and extract actionable insights.

Operations Intern, PetroChina International Co. Ltd., Shanghai, China *June – Aug 2021*

- Drafted transaction contracts, tracked freight insurance policy documents, sorted transaction approval and payment forms and invoice statements. Assisted traders in conducting industry surveys and research on the futures spot market.

TECHNICAL SKILLS

- Programming and Tools: Python (NumPy, Pandas, Scikit-learn, PyTorch, Matplotlib, Simpy, Scipy, Transformers), R (tidyverse, dplyr, ggplot2, caret, forecast, xgboost, randomForest, lubridate, car), Apache Spark, Tableau, Power BI, ER/Studio, Excel (advanced analytics), WPS Office.
- Database: PostgreSQL, MongoDB, Access.
- Blockchain: Solidity, Remix, Metamask; implemented ERC-20, ERC-721 and ERC-1155 token standards.
- Others: ExtendSim, iMovie.

OTHERS

- Languages: English (advanced), Mandarin (native)
- Hobbies: Movies, outdoor sports and badminton