TIANYI XIE

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EXPERIENCE

Goldman Sachs *Dallas, TX*

Quantitative Engineer – Full Time *Oct 2024 - Present*

- Automated capital model development process using **Python, Bash** to build a data pipeline, reducing manual process cycles from weeks to days.
- Developed, deployed, and maintained **quantitative machine learning and statistical models** across multiple portfolios, providing actionable insights and model-driven decision support for trading and front-office teams.
- Designed and implemented **data engineering and feature engineering** pipelines for large-scale structured datasets, improving model performance and scalability.
- Partnered cross-functionally with **traders, risk managers, business stakeholders, and software engineers** to translate business requirements into scalable analytical and modeling solutions.
- Built, monitored, and enhanced **CECL/CCAR transition matrix–based models**, improving model accuracy, stability, and regulatory reliability through ongoing validation and performance tracking.

Citibank, N.A. *Coppell, TX*

Risk Model Quantitative Analyst/Developer – Full Time *July 2020 – Oct 2024*

- Built and automated large-scale **stress testing and simulation pipelines in Python**, reducing end-to-end runtime from **two weeks to two days** through optimized workflows, model calibration, and statistical validation.
- Enhanced **Monte Carlo simulation models** to generate granular, time-dependent loss distributions across multiple scenarios, driving **$10B in annual risk capital reduction** through improved loss estimation and decision support.
- Designed and optimized **high-performance data processing pipelines** using multiprocessing and parallel computation, achieving **30–50% reductions in runtime and memory usage** across production models.
- Developed **data engineering solutions** including standardized JSON output schemas and binary file I/O, improving data accessibility for downstream analytics, dashboards, and UI applications.
- Created **data quality validation frameworks** to detect anomalies, inconsistencies, and missing values, increasing reliability of large-scale financial datasets in production environments.
- Modeled **credit risk dynamics** by constructing long-term average and short-term stress probability profiles from historical default data and integrating them into simulation frameworks.
- Automated **analytical reporting and visualization pipelines** using Python, reducing manual reporting cycles from **days to hours** and enabling scalable, repeatable insights delivery.

Engineering College - Parallel Computing *Ann Arbor, MI*

Graduate Student Instructor *Sep 2019 - Dec 2019*

- Providing instruction sections on parallel computing tools such as MPI, OpenMP, CUDA.

EDUCATION

University of Michigan, Stats Department *Ann Arbor, MI*

M.S. in data science, GPA 3.7/4.0 *Sep 2018 – May 2020*

Core Courses: Deep Learning, Computational Data Science, Parallel Computing, Python Programming, Time Series Analysis, Time Series Analysis, Web System and Full Stack Programming

University of Michigan, LSA *Ann Arbor, MI*

B.S. in Quantitative Finance & Data Science, GPA 3.6/4.0 *Jan 2016 – May 2018*

Core Courses: Probability & Statistics, Natural Language Processing, Machine Learning, Econometrics, Database Management, Applied Regression, Data Structure in C++, Stochastic Process

SKILL & CERTIFICATION

Programming Languages: Python, SQL, C++, R, HTML, CSS, Excel, Slang
Packages & Tools: Scikit-learn, Pandas, NumPy, PyTorch, PySpark, CUDA, Linux, Flask, Git, Tensorflow, Keras
Certification: CFA charter holder/FRM certification