JUNCHEN XIONG

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EDUCATION

Columbia University, M.A. in Quantitative Methods in the Social Sciences (QMSS) *Aug 2023 – Feb 2025*
Honors: Top 5% of the class (GPA: 3.98/4.0)
Coursework: Modern Data Structure (Git, AWS, Azure), Bayesian Statistics, NLP, Time Series Analysis, Database Design
Boston University, B.S. in Business Administration, *Aug 2019 – May 2023*
Minor: Mathematics, Magna Cum Laude (GPA: 3.82/4.0); Honors: Dean's list; **1st** in DICK'S Sporting Goods analytics case competition

PROFESSIONAL EXPERIENCE

New York State Energy Research and Development Authority (NYSERDA) **New York City, NY**
Energy Markets Analyst Intern, Policy, Analysis, & Research Unit (PandA) *Feb 2024 - Dec 2024*

- Extracted and processed **5M+** records of inventory and pricing data from S&P Commodity Insight **Flask-based APIs**. Performed schema validation, data partitioning, and API pass-through handling, improving data scalability. Built a in-house **STAR schema commodity database**, reorganizing 10+ inventory, pricing, and demand tables, enabling efficient querying.
- Developed and optimized a **Gradient Boosting Regression model** to forecast NYISO grid load, incorporating wholesale power market dynamics and retail utility rate models. Applied **feature engineering techniques** on hourly energy demand, weather patterns, and economic indicators to enhance model accuracy. Tuned hyperparameters with **GridSearchCV**, reducing forecast errors by **20%** and achieving **<100 MW** hourly error margins, improving confidence in grid management decisions.
- Built **10+ Tableau dashboards** to monitor grid demand, wholesale electricity prices, and regional supply trends, enabling data-driven insights. Enhanced dashboards with **DAX calculations, drill-down filters**, and geospatial visualizations, leading to a 70% improvement in market reporting efficiency for energy analysts and policymakers.

Deloitte **Sichuan, China**
Financial Advisory Intern *Jun 2023 - Aug 2023*

- Consulted on a $5M 'Bicycle Greenway' project for a real estate client, leveraging both **desk** and **field due diligence research** to uncover branding opportunities within their **ESG initiatives**. Provided data-driven recommendations that strategically positioned the client to secure future government grants exceeding **$20M**.
- Developed an **automated Python tool** using the Requests package to interface with Chengdu RailTransit's API, converting JSON and XML interim data into Excel-based traffic volume trend maps, enhancing accessibility for over 15 colleagues with varying skill levels.
- Presented weekly findings to client engineers and produced extensive reports of over **10 pages** that supported downstream analysis for evaluating Transit-Oriented Development (TOD).

Chengdu Wide Horizon (WanHua) Investment Group Co. Ltd **Sichuan, China**
Data Operation Consultant *Apr 2021 - Jul 2021*

- Implemented **K-means clustering on CRM data**, segmenting customers by engagement frequency and demographics. Optimized clusters using **silhouette scores**, improving segmentation accuracy. Enhanced marketing personalization, reducing bounce rates by **10%+**, achieving **70%** initiative acceptance, and generating an expected incremental value of ¥5,000.

PROJECTS AND RESEARCH

Hybrid Machine Learning Modeling of Spatial-Temporal NO_2 Concentrations in Israel **New York, NY**
Research Assistant for Professor Mike Z. He, Columbia University, https://doi.org/10.1289/isee.2023.MP-011 *Dec 2024 - Mar 2025*

- Developed a residual-explaining **extreme Gradient Boosting (XGBoost)** model to refine NO_2 concentration predictions at a granular 200 m^2 resolution, incorporating meteorological (wind, temperature), topographical (elevation), and road network metrics (density, intersections). Achieved spatial **R^2 of 0.84** and overall R^2 of 0.51, significantly improving model interpretability.

Solar Eclipse Energy Resilience and Emergency Preparedness Project **New York City, NY**
Energy Markets Analyst Intern *March 2024 - May 2024*

- Engineered an **OLS regression model in Python** to quantify key drivers of gasoline price fluctuations, incorporating elasticity measures, time-series trends, and exogenous shock variables. Validated model performance using **heteroskedasticity tests** and **multicollinearity diagnostics (VIF)**. Integrated findings into **Excel Power Query** visualizations and authored a strategic memo, influencing 2 preemptive response policy changes and 5 policy annex amendments.

SKILLS

- **Analysis & Visualization:** Python (Pandas, scikit-learn, Matplotlib, Requests, SciPy), R, Tableau, Power BI, A/B Test, Google Analytics, Git Version Control, Hadoop, Spark, Financial Modeling and Forecasting (DCF, PE)
- **Database:** PostgreSQL, Microsoft Azure, Big Query, AWS (EC2, Glue, S3), Oracle SQL, MongoDB, Apache Airflow, Databricks
- **Statistics & Machine Learning:** Causal Inference, Linear(Logistic) Regression, Boosting Algorithms, Advanced Tree Models
- **Interests & Specialties:** Powerlifting & Strength Training (NASM CPT License), Collegiate Swimming, Speedcubing