

EDUCATION

- **University of Texas** Austin, TX
Master of Science in Business Analytics May 2021
- **University of Akron** Akron, OH
Bachelor of Business Administration in Financial Management May 2020

EXPERIENCE

- **KeyBanc Capital Markets** Cleveland, OH
Quantitative Analyst July 2021 - Present
 - **Trading Application:** Built a realtime fixed income trading application using TypeScript, React, AgGrid, Kafka, and FastAPI that supports thousands of updates per second, tens of millions of messages per day, matrix pricing, formulas, and 5 concurrent corporate bond traders to manage risk and respond to RFQs.
 - **Pricing Engine:** Built a microservice API with Refinitiv bond fundamental data, QuantLib, and BPIPE treasury curves to support over 3000 calculations per second of duration, yield, price, net present value, and yield-to-worst for investment grade corporate bonds.
 - **Spread Modeling:** Generated model features in BigQuery from various sources with window functions to detrend and predict g-spread dynamics using Random Forest models. Deployed models in real-time trading and analytics.
 - **Visual Analytics:** Deployed 8 Streamlit, React, or Tableau applications with over 20 daily active users improving reporting accuracy to regulators and clients.
 - **Vendor Management:** Consulted with vendors to gather firewall, connectivity, public/private key details from OneTick, Refinitiv, Bloomberg, and MarketAxess to enable connectivity between internal cloud environments and vendor APIs, FIX engines, and data products.
 - **Data Transformation:** Productionized 11 ETL pipelines using Airflow, BigQuery, Cloud Storage, and Postgres.
 - **Unstructured Data:** Utilized BigQuery to produce weekly sell-side research products consisting of over 1100 unique companies from our terabyte-scale consumer transaction dataset.
 - **Trading Infrastructure:** Architected and wrote Java application to interface with MarketAxess FIX engine to send algorithmically-generated spread to benchmark levels for investment grade bonds. Streamed live positions and trade data from TOMS API.
 - **Cloud Migration:** Gathered requirements from internal team, designed, and implemented a cloud-native solution to promote usability and cost savings. Collaborated with internal technology teams to abide by security model for publicly available endpoints and data loss prevention initiatives.
 - **Generative Modeling:** Trained a generative adversarial network (GAN) with TensorFlow to simulate equity order flow data. Used synthetic data to backtest market impact models.
 - **Volatility Modeling:** Implemented equity volatility models and produced an automated Airflow job to store volatility estimations for our tradable universe. Used volatility models and Monte-Carlo simulations to estimate probability of limit order fills.

PROJECTS

- **Dun & Bradstreet Natural Language Processing:** Extracted mergers and acquisition activity details from news feeds using TensorFlow and feature vectors derived from large language models.
- **Factor Modeling:** Constructed long-short portfolios on default probability and regressed returns to impute alpha.
- **Portfolio Management Web Application:** Portfolio visualization tool to monitor live performance of University of Akron's student managed fund.
- **Honors Thesis:** Analyzed country-linked ETFs and the influence of culture and governance on financial crash risk. Research resulted in a published work at an institution.

TECHNICAL SKILLS

- **Languages:** Python, Javascript, Java, SQL
- **Technologies:** BigQuery, Linux, Docker, git, TypeScript, React, Kafka, Redis, Flask
- **Licenses:** Securities Industry Essentials, Series 7