Nat Fernelius

New York, New York

 (281) 253-3933 nataliafernelius@gmail.com ferneliusn.github.io

Experience

Ernst and Young   **New York, NY**
Machine Learning/AI Engineer   *July 2023 – Present*

- Staff Machine Learning/AI Engineer on EY's Tax, Technology, and Transformation Alwin tax automation team specializing in machine learning regression, LLM application development, and data engineering for ML/AI tasks
- Built embedded VAT tax code prediction model to identify tax booking issues and secondarily predict issue categories of booking issues. Created potential feature sets based on client conversations and performed feature engineering and hyper parameter tuning to meet accuracy goals. Created PowerBI dashboard to showcase model performance during client conversations.
- Created LLM application and data pipeline for visual processing of and data extraction from images of organizational charts. Tool was able to ingest and record relevant information on each entity and relationship in the chart based on either client instructions or a visual key.
- Created natural language queryable graph database using an ETL pipeline pulling from cloud data lakehouse architecture.

Machine Learning/AI Engineering Intern   *June 2021 – July 2022*

- Built 3 ML models based on different client specifications for sales and use tax code predictions.
- Built ML model for use within firm's internal property tax group for improved time series price prediction regressions.

University of Texas Economics Department   **Austin, TX**
Scientific Computation Undergraduate Fellowship   *October 2021 – May 2022*

- Selected to manage a big data econometric repository for a UT Economics PHD.
- The completed repository and data pipeline architecture was able to scrape, clean, and analyze tens of millions of Airbnb listings over time for use within time series econometric analysis.

Skills

Python ML Development: Pandas, scikit-learn, PyTorch
Multivariate Regression Techniques: Time series analysis, NLP, Feature engineering, Econometrics
LLM Application development Azure OpenAI, Semantic Kernel SDK, Microsoft Copilot Extensions
Data Engineering Databricks, Neo4j, PySpark, SQL, Cypher Query Language, Azure
Data Visualization PowerBI, matplotlib, Graph database visualization
Unix/Linux Nix, Virtualization, Bash scripting
Additional Language Experience Fortran, R

Projects

Predicting Unemployment with Sentiment Analysis: Published undergraduate thesis showcasing time series prediction of the unemployment rate using both supervised and unsupervised sentiment analysis of Federal Reserve FOMC meeting minutes. Determined to be a significant predictor over a three month time horizon.

Education

The University of Texas at Austin   **Austin, TX**
B.A. Honors Economics (**GPA:** 3.96/4.00)   *August 2019 – May 2023*
B.A. Plan II Honors (Concentration in Scientific Computation) (**GPA:** 3.96/4.00)   *August 2019 – May 2023*