MARK ATTWOOD

Data Scientist & Analytics Professional

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Portfolio: attwoodanalytics.com

PROFESSIONAL SUMMARY

Data scientist with expertise in machine learning, econometrics, and statistical modeling. Proven track record developing high-fidelity predictive models on large datasets. Creator of open-source Python packages and builder of automated dashboards that increase operational efficiency and informational transparency, saving the equivalent of a part-time analyst's workload. Strong foundation in both theoretical statistics and practical business applications, with experience spanning financial services, consulting, and entrepreneurship.

PROFESSIONAL EXPERIENCE

Capital Markets Analyst | Veterans United Home Loans | July 2024 - February 2025

Developed predictive models and automated dashboards for billion-dollar mortgage portfolio processing 2,000+ loans weekly.

- Built XGBoost delinquency prediction models to forecast loan performance and reperformance timing
- Created simulation models forecasting when loans go delinquent and reperform
- Developed expected cash dashboard reducing manual work by 2-3 hours weekly
- Built trading team dashboard saving 1-2 hours weekly
- Created Python tkinter application saving 4 hours weekly
- Integrated multiple systems including Excel, Smartsheet, Encompass, and Compass

Teaching Assistant | University of Missouri-St. Louis | Fall 2023 - Spring 2024

Official graduate appointment providing instruction, grading, and tutoring for economics courses.

- Conducted in-person and online tutoring sessions
- Graded assignments and exams for multiple course sections
- Taught supplemental instruction sessions

Consulting Analyst | National Bank | Summer 2023

Developed comprehensive loan default prediction model achieving exceptional performance metrics.

- Built machine learning model achieving 98.5% accuracy and 90%+ recall/sensitivity
- Processed 8 billion observations for model training and validation
- Developed complete ETL pipeline for data processing and model deployment

Business Owner | Comet Coffee | 2013 - 2024

Founded and operated successful specialty coffee business achieving $1 million annual revenue.

- Managed 20 employees and daily operations
- Received recognition including "Top 100 Places to Eat" and "Best Cookie" awards
- Successfully sold business in 2024

Electrician | Residential Construction | 2022 - 2023

Performed electrical installations and code compliance work concurrent with graduate studies and business ownership.

TECHNICAL SKILLS

Programming Languages: Python (Expert), SQL (Expert), R (Advanced), JavaScript (Working), SAS (Working), C++ (Working)

Analytics & Visualization: Tableau, PowerBI, Excel (Expert), ggplot2, matplotlib, Seaborn, E-views

Databases & Cloud: SQL, MS SQL Server, MongoDB, Snowflake

Specialized Tools: ArcGIS Pro, Git, Jupyter, Encompass, Smartsheet, Compass

Methods Expertise: Machine Learning, Statistical Modeling, Econometrics, Time Series (ARIMA), Panel Data Analysis, Discrete Choice Models, ETL Pipeline Development, Data Mining, Classification & Clustering, Causal Inference, Experimental Design, A/B Testing

KEY PROJECTS

GBM Framework Python Package | Open Source Development
Unified framework for Gradient Boosting Models with automated hyperparameter tuning, SHAP analysis, and system optimization. Published on PyPI with comprehensive documentation and benchmarking capabilities.

GNMA Delinquency Prediction Models | Veterans United Home Loans
Developed XGBoost models for government-backed mortgage portfolio performance analysis. Created simulation models forecasting loan delinquency and reperformance timing for multi-billion dollar portfolios.

Automated Trading & Cash Management Dashboards | Veterans United Home Loans
Built Python ETL pipelines and interactive dashboards replacing complex Excel systems. Developed expected cash dashboard and trading team dashboard with Python tkinter applications.

Coffeeshop Site Selection Analysis | Geospatial Analytics
Comprehensive geospatial analysis combining ArcGIS Pro tools and Python web scraping to optimize business location selection using demographic data and market gap analysis.

Fleet Electrification Benefit-Cost Analysis | Municipal Policy Research
Developed comprehensive benefit-cost analysis for City of Kirkwood's vehicle fleet transition from internal combustion engines to electric vehicles, demonstrating economic trade-offs in municipal decision-making.

Loan Default Prediction Model | National Bank Consulting
Built machine learning model achieving 98.5% accuracy and 90%+ recall on 8 billion observations. Developed complete ETL pipeline for data processing and model deployment.

gbmframework | Open Source Python Package
Published machine learning framework available on GitHub for gradient boosting applications.

Cable Broadcasting Market Analysis
Applied logistic regression, Bass diffusion models, and lift charts to inform market expansion decisions.

Telecommunications Demand Forecasting
Developed ARIMA time series models for telecommunications demand forecasting applications.

EDUCATION

Master of Arts, Economics | University of Missouri-St. Louis | May 2024
GPA: 3.914 | Graduate Teaching Assistant (Fall 2023 - Spring 2024)

Graduate Certificates (May 2024):

- Data Science Graduate Certificate
- Applied Econometrics Graduate Certificate
- Artificial Intelligence Graduate Certificate

A-Level Coursework: Machine Learning, Data Mining, Artificial Intelligence

Bachelor of Arts, Economics | University of Cincinnati | 2005

TECHNICAL SKILLS

Programming Languages: Python (Expert), SQL (Expert), R (Advanced), SAS (Advanced), JavaScript (Working), C++ (Working)

Analytics & Visualization: Tableau, PowerBI, Excel (Expert), ggplot2, matplotlib, Seaborn, SAS, E-views

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CERTIFICATIONS & ACHIEVEMENTS

- Published open-source Python package (gbmframework)
- Graduate Teaching Assistant appointment with monthly compensation
- A-level performance in Machine Learning, Data Mining, and AI coursework
- Business recognition: Top 100 Places to Eat, Best Cookie awards