rowanmorkner@gmail.com +1 (279) 759-1470

Rowan Morkner

OBJECTIVE

Quantitative Economist and Data Scientist with a proven track record of architecting end-to-end machine learning pipelines and complex market simulations. Expert in Python and R, with deep hands-on experience deploying multi-agent reinforcement learning (MARL) models, building automated data infrastructure, and training ensemble models. Passionate about bridging the gap between rigorous algorithmic design and real-world market dynamics.

EXPERIENCE

Wildcat Data Hub, Chico — Data Science Consultant *Aug 2024 – May 2026*

- Engineered data science workflows, including automated data collection, cleaning, statistical modeling, and visualization for academic and community research initiatives.
- Architected the foundational infrastructure and business processes for the initiative, designing the web presence and setting operational standards for future analysts.
- Managed project deliverables using Agile methodologies, translating ambiguous partner requirements into technical data tasks.

Chico State Economics Department, Chico — Economics Tutor *Aug 2024 – May 2026*

- Provided tutoring support for undergraduate economics students, simplifying complex theories, facilitating discussions on economic models and policy, and assisting with quantitative problem-solving.
- Strengthened students' ability to analyze data, interpret models, and apply economic reasoning to real-world contexts.
- Fostered collaborative learning environments to enhance academic performance.

Ansil Investments, Remote — Intern Analyst *May 2024 – Jul 2024*

- Conducted quantitative and qualitative research on financial markets, reviewing earnings reports, market data, and trends to evaluate investment opportunities.
- Synthesized complex information into concise analyses with actionable buy, sell, or hold recommendations.
- Applied economic and financial principles to real-world investment decisions, building experience in applied econometric and financial analysis.

EDUCATION

CSU Chico, Chico — B.A. in Financial and Quantitative Economics

Aug 2022 – May 2026

GPA: 3.837 – Magna Cum Laude and Honors in the major
Data Science Certificate
Economics Club – President
Economics Outstanding student of the year award 2026
Relevant Coursework: Econometrics, Statistical Analysis, Economic Forecasting, Financial Accounting, Data Analysis, Programming (R, Python, Stata)

SKILLS

- Programming: R, Python, Stata, Excel VBA
- Data Analysis: Econometrics, statistical modeling, forecasting, visualization, panel data regression methods, difference in difference, fixed effects, impact analysis, Pandas, NumPy
- Machine Learning: PettingZoo, XGBoost, Pytorch, Tensorflow
- Research: Market analysis, literature review, BCA
- Collaboration: Agile project management, team communication, mentoring
- Writing: Clear, concise summaries and reports for technical and non-technical audiences

RESEARCH & PROJECTS

Full papers can be found on my personal website at rowanmorkner.com

Digital Cartels: Hub-and-Spoke Collusion in Rental Markets — Capstone Project

- Built a multi-agent reinforcement learning simulation to investigate whether centralized pricing platforms (modeled after RealPage) facilitate tacit collusion among landlords.
- Implemented a two-level hierarchical MARL architecture with PPO-trained agents, a McFadden discrete-choice tenant model, and a vectorized market physics engine using PettingZoo, Stable-Baselines3, and NumPy.
- Designed and ran hyperparameter sweeps and statistical analysis pipelines to compare competitive vs. hub-coordinated equilibrium outcomes.

Prediction Market Arbitrage Trading Bot — Data Science Project

- Developed XGBoost Ensemble model for weather prediction, training on millions of data points, live predictions, daily automated fine tuning and error correction
- Designed and implemented fully automated data lifecycle pipeline for automated polling, parsing, inference, evaluation, training, fine tuning, and SQLite database storage
- Navigated a half dozen API endpoints, ensuring data integrity and format cross compatibility, requiring custom parsing.
- Achieved average paper trading profits of $3000 per day in cross platform arbitrage between Polymarket and Kalshi
- Deployed bot to remote Linux server for constant up time
- Created live analytics dashboard to monitor trading and bot status

Economic Evaluation of B-Line's High-Frequency Transit Proposal — Research Paper

- Executed a comprehensive Benefit-Cost Analysis (BCA) for a proposed $21.6M transit expansion in Chico, CA, following USDOT 2025 guidelines.
- Developed a hybrid time-series forecast using the Prophet model to project ridership through 2045, accounting for post-pandemic recovery and regional seasonality.
- Monetized societal benefits including travel time savings (>$18M), external highway cost reductions, and net emission impacts.
- Performed sensitivity analysis on discount rates and ridership growth, demonstrating a path to a positive Net Present Value (NPV) and a Benefit-Cost Ratio (BCR) of 1.07.

Serial Correlation and Transit Demand Elasticity — Econometrics Replication Paper

- Replicated and extended a seminal study on gasoline price elasticity using a monthly panel dataset (2005–2019) for 10 major U.S. urban areas.
- Demonstrated that baseline elasticity estimates are highly sensitive to serial correlation, with standard errors inflating by 94-138% when applying Arellano cluster-robust correction.
- Uncovered robust nonlinear threshold effects, finding significant transit substitution (elasticity of 0.115) only when fuel costs exceed $3.00/gallon.
- Developed an automated R pipeline to integrate and clean multi-source data from the NTD, EIA, FRED, and ACS