JOSEPH BUNSTER

Quantitative Finance and Applied AI
St. James, NY | 631-873-6195 | bunster1227@gmail.com
regimealpha.com

Quantitative researcher and modeler with nearly five years of model risk experience at JPMorgan, currently conducting generative AI research for Meta on contract. Built Python challenger models and led domain-specific LLM fine-tuning and evaluation at JPMorgan. Develops portfolio regime analytics and partners with Meta researchers on vendor strategy, research questions, and evaluation. M.S. Mathematics, NYU Courant.

Python | Quantitative Modeling | LLM Evaluation | Supervised Fine-Tuning | Agentic Workflow Research

PROFESSIONAL EXPERIENCE

Meta
Dec 2025 - Present

Research Collaborator V (Contract) | Generative AI

- Partner with Meta researchers on vendor strategy, helping define research questions, structure evaluation workflows, and determine which findings should guide next steps.
- Evaluate frontier LLM reasoning, prompts, rubrics, and reference solutions across mathematics and other STEM domains, examining correctness, assumptions, proof validity, ambiguity, and alignment with the intended task.
- Advise three external data vendors within a four-person leadership group, translating research priorities and quality findings into recommendations for annotation workflows and vendor process improvements.
- Lead early-stage research on self-healing annotated datasets, investigating diagnosis, bounded repair, verification, intent preservation, and criteria for escalation to human review.

JPMorgan Chase
Jun 2021 - Feb 2026

Quantitative Analyst Senior Associate | CIB Finance Model Risk 2023 - 2026

Quantitative Analyst Associate | CIB Finance Model Risk 2021 - 2023

- Built Python challenger models using regression, PCA, vector error-correction models (VECM), stochastic time-series methods, and mixture models to test assumptions, stability, and regime sensitivity.
- Led the CIB Finance Model Risk team's frontier LLM initiative, applying supervised fine-tuning and domain-specific evaluation to model risk analysis and review workflows.
- Led Tier 1 independent model reviews across Equities, Rates, Credit, Securitized Products, Prime Finance, and Clearing, covering revenue forecasting and financial risk applications.
- Evaluated models supporting CCAR/ICAAP, recovery and resolution planning, wholesale credit, and data science use cases; challenged modeling assumptions and documented methodological limitations.
- Identified and escalated model risks through formal review reports, translating quantitative findings into recommendations for model owners and senior stakeholders.
- Partnered with technology colleagues to develop Python-Excel analysis tooling; contributed PCA and best-subset selection modules to standardize recurring validation workflows.

QUANTITATIVE SOFTWARE AND RESEARCH

Regime Alpha 2025 - Present

Founder and Independent Quantitative Researcher

- Develop a Python/Streamlit research platform linking market and macroeconomic data to portfolio factor decomposition and regime-conditioned diagnostics.
- Research Gaussian and Bayesian mixture models, hidden Markov models, and stochastic state transitions to characterize market states and estimate regime probabilities.
- Analyze how volatility, correlations, drawdowns, and factor concentration change across regimes to assess portfolio risk and effective diversification.
- Develop FRED and Alpha Vantage data pipelines with quality checks and readiness controls intended to prevent stale or invalid inputs from entering model builds.
- Design model-building workflows that separate edited inputs from saved analyses and preserve prior successful results; review AI-assisted code changes in GitHub.

TECHNICAL SKILLS

Programming and tools: Python, Git/GitHub, Streamlit, Excel, LaTeX.

Libraries: pandas, NumPy, scikit-learn, statsmodels, TensorFlow/Keras, Matplotlib, Seaborn.

Quantitative methods: Time-series analysis, stochastic modeling, regression, PCA and factor decomposition, VECM and cointegration, mixture models, hidden Markov models, optimal transport.

AI and evaluation: Model training and tuning, supervised fine-tuning, agentic workflow research, LLM reasoning evaluation, rubric design, reference solution review, data quality assessment.

Model risk: Independent model validation, challenger modeling, assumption and stability testing, model review reporting, technical recommendations to researchers and model owners.

EDUCATION AND HONORS

NYU Courant Institute | M.S. Mathematics May 2022

Thesis research: optimal transport for financial time series, including Wasserstein distances, barycenters, and Sinkhorn methods.

Farmingdale State College | B.S. Applied Mathematics Dec 2018

3rd Place, National Collegiate Mathematics Championship | MAA, June 2018

EARLIER EXPERIENCE

Morgan Stanley | Wealth Management Summer Analyst 2016

The Beyer Stein Group: supported advisors managing more than $1 billion in assets; prepared pre-market summaries and researched stock and ETF ideas for model portfolios.