

Uladzimir Charniauski

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Education

University of Connecticut

BA in Applied Mathematics, BA in Statistics, Minors in CS & Economics

Aug 2022 – Dec 2025

- **GPA:** 3.83/4.0
- **Relevant coursework & topics:**

- **Statistical Theory & Methods:** Bayesian Machine Learning, Time Series Analysis, Statistical Computing (R), Probability Theory
- **Machine Learning:** Reinforcement Learning, Deep Learning, Bayesian Machine Learning, Machine Learning for Physical Sciences (SciML), Artificial Intelligence - Time Series Foundation Models (TSFMs)
- **Mathematics:** Linear Algebra, Calculus III, Real Analysis, Numerical Analysis (MATLAB).

Research Projects

Time Series RAG X (TS-RAGX)

May 2025 - Present

- Extending the **TS-RAG** framework by augmenting each retrieved component with localized context windows for each retrieved component to improve zero-shot forecasting performance in transformer-based time series forecasting models (TSFMs)
- Conducting extensive experimental evaluations of **Chronos-Bolt** and **ToTo** TSFMs, benchmarking their predictive accuracy, runtime performance, and scalability on large-scale temporal datasets
- Developed automated workflows to streamline hyperparameter tuning and model evaluation processes, accelerating experimentation cycles and improving reproducibility

Memory-Augmented Variational RNN (MVRNN) | [GitHub](#)

Sep 2025 - Dec 2025

- Designed novel architecture combining variational and Wasserstein autoencoders with memory-augmented RNNs to model latent temporal dependencies in high-variability sequential data
- Derived evidence lower bound (ELBO) for sequential variational inference with external memory structures
- Demonstrated **7-10%** outperformance of a memory-augmented variational networks in terms of **RMSE** and **MAE** metrics on several real-world stock volatility datasets

Filter Bank-Embedded MRNN and MLSTM | [GitHub](#)

Feb 2025 - Apr 2025

- Developed **Filter Bank-Embedded Memory-Augmented RNN (F-MRNN)** and **LSTM (F-MLSTM)**, integrating custom-designed filter banks to capture diverse frequency components in temporal data
- Demonstrated that **MRNN** and **MLSTM** frameworks benefit from multi-filter architecture in approximating fractional differencing
- Empirically demonstrated the **5-7%** outperformance of filter-banked memory-augmented networks on real-world Time Series data with persistent long-range dependencies in terms of **RMSE** and **MAE** metrics

Publications

Long-Memory AutoRegressive Bandits.

Present

Uladzimir Charniauski, Yao Zheng

Manuscript in preparation. Draft available upon request

On the Anomaly Detection in Time Series Data with Kernel PCA

April 2025

Uladzimir Charniauski

UConn Journal of UConn STAT Student Seminars

Autoregressive Bandits in Near-Unstable or Unstable Environment.

Sep 2024

Uladzimir Charniauski, Yao Zheng

Working Experience

NSF REF Undergraduate Researcher

University of Connecticut

Storrs, CT

Sep 2025 – Present

- Led the development and implementation of specialized RAG-systems for enhancing the forecasting performance of TSFMs through bringing architectural innovations to latest architectures.
- Processed, cleaned, and engineered features from large-scale time series datasets, leveraging statistical methods and domain-specific transformations to improve model robustness.
- Collaborated with faculty and graduate researchers to document findings, visualize results, and prepare materials for manuscript writings and conference presentations

ML Engineering Intern - AI Platform

The Hartford

Hartford, CT

May 2025 – Aug 2025

- Built a **Streamlit**-based tool integrating **AWS Bedrock LLMs** to generate automated PowerPoint decks from enterprise chatbot output (HartAI), reducing manual effort by 80%.
- Managed end-to-end model deployment workflows using **MLflow**, including experiment tracking, model versioning, and production deployment to ensure reliable and scalable AI solutions
- Leveraged **Git** for robust version control, code reviews, and collaborative development within a cross-functional engineering team

Statistical Analyst Intern

Valos

Boston, MA

Jun 2024 – Aug 2024

- Conducted statistical analysis and data manipulation using **R (Tidyverse)** to support business intelligence and decision-making initiatives.
- Performed exploratory data analysis, statistical modeling, and data visualization to identify patterns and generate actionable insights
- Created and maintained comprehensive documentation of data sources, workflows, and code to ensure full reproducibility and transparency

Skills and Technologies

Languages & Libraries: Python, R, MATLAB, SAS, SQL, Tidyverse, NumPy, Pandas, Scikit-learn, PyTorch, TensorFlow, Matplotlib, Tikzplotlib, Streamlit, python-pptx, LlamaIndex

Technologies: Git, GitHub, AWS Cloud Services, Snowflake, MLflow, Jupyter Notebooks

Frameworks & Techniques: LangChains, ReAct AI Agents, Statistical Modeling and Forecasting, Machine Learning, Data Visualization, Data Engineering, Prompt Engineering

Awards and Honors

- **National Honorary Mathematics Society, Pi Mu Epsilon**, University of Connecticut
- **2023 & 2024 New England Scholar**, University of Connecticut
- **Spring 2024 & Fall 2024 Dean's List**, University of Connecticut