Ata Karagoz

Data Scientist — Computational Neuroscientist

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Profile

Interdisciplinary researcher with 7+ years of experience leveraging advanced machine learning techniques, including reinforcement learning, RNNs, and transformers, to analyze complex human behavior and decision-making.
Proven ability to develop scalable solutions, accelerate workflows, and generate actionable insights, with publications in high-impact journals and experience presenting at international conferences.
Skilled in Python and data analysis pipelines, with a strong passion for applying data-driven approaches to solve real-world challenges in dynamic, fast-paced environments.

Skills

Machine Learning: Reinforcement Learning (Tabular RL, Bandits), Multi-class classification (SVM, Logistic Regression), Dimensionality reduction (PCA, MDS), Neural Networks (RNNs), NLP
Analytics: Statistical Modeling (GLMs, Hierarchical Mixed Effects Models), Experimental Design, Feature Engineering, Data Visualization (matplotlib, seaborn)
Programming: Python (PyData stack, PyTorch, JAX), R, SQL, MATLAB, JavaScript, Git, Docker/Singularity, High-Performance Computing Clusters

Experience

Computational Neuroscience Researcher **Aug. 2020 – Present**
Washington University in St. Louis *St. Louis, MO*

- Led end-to-end machine learning projects from experimental design through implementation, developing custom models (RL, RNNs, LLMs) and collecting data from thousands of participants to uncover insights into human decision-making, resulting in four first-author publications
- Built feature-weighted RL agents and RNNs (PyTorch) to explore connections between uncertainty and memory in behavioral data, resulting in an international conference presentation (Society for Neuroscience 2024)
- Developed object-oriented reinforcement learning model code for fitting human behavior, improving model iteration and fitting time by 10x, enabling rapid testing of cognitive hypotheses
- Engineered high-performance analysis pipelines (HPC, JAX) to accelerate image data processing by 40x, by vectorizing and profiling code, enabling new analyses to be run involving terabytes of functional data
- Designed experiments and created behavioral measures to assess human planning, using Q-learning agents (RL) to analyze choice data, leading to first-author publications and securing $80k in grant funding
- Applied transformer models (BERT, USE) and feature labeling to compare semantic embeddings with neural decoder confusion matrices (Scikit-learn), resulting in first author publication
- Awarded competitive T-32 training grant that funded fellowship for two years
- Engaged in collaborations with domain experts in other labs, translating multi-faceted requirements into clean analytic code
- Fostered technical excellence across the lab by mentoring colleagues in software best practices, and delivering guest lectures on Python programming and data analysis to graduate students and lab members

Neuroscience Research Assistant **Jan. 2018 – Aug. 2020**
University of Texas at Austin *Austin, Texas*

- Assisted with projects involving large scale data collection and organization involving tens of terabytes of neural data
- Translated stakeholder questions about data into reproducible data pipelines using MATLAB and Python, ensuring alignment with stakeholder needs and resulting in more rapid experiment iteration
- Engineered innovative metrics from complex navigational behavior, enabling novel insights into participant performance
- Streamlined data workflows and labeling of behavioral datasets, enabling new insights from terabytes of legacy and newly collected data

Education

Washington University in St. Louis **Aug. 2020 – May 2025**
PhD in Cognitive, Computational and Systems Neuroscience *St. Louis, MO*

Washington University in St. Louis **Aug. 2020 – Dec. 2022**
M.A. in Psychological and Brain Sciences *St. Louis, MO*

University of Texas at Austin **Aug. 2014 – May 2018**
B.S. in Neuroscience *Austin, TX*