Sadat Shahriar, PhD

Applied Scientist (L5), Amazon.com

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PROFILE SUMMARY

Highly passionate and adept scientist specializing in Machine Learning, Natural Language Processing, and Data Science with **five** years of experience crafting state-of-the-art solutions.

SKILLS

Machine Learning	Programming Languages and Tools	Domain Expertise
Supervised Learning (Linear regression, Logistic regression, SVM, Random Forest, XGBoost), Unsupervised Learning (PCA, K-means clustering), Neural Networks (Vanilla, LSTM, GRU, CNN)	Python (Pandas, NumPy, Scikit-Learn, PyTorch, Keras, Tensorflow, Matplotlib, Seaborn, spaCy, NLTK), C++, R, Matlab, shell scripting, SQL, Cloud Services (AWS, Google Cloud), Git, MS Excel	Natural Language Processing (tf-idf, word embeddings, Attention Mechanism, Transformers, Language Models like BERT, GPT-2,3, Llama), Probability and Statistics, Data Preprocessing, Feature Engineering

EXPERIENCE

Applied Scientist II (L5) — **Amazon.com, inc** | June 2025 - present

– **Designed and launched NL2Cedar**, the natural language to Cedar policy autoformalization system powering Policy in Amazon Bedrock AgentCore, enabling customers to author fine-grained authorization rules without Cedar expertise.
– **Architected a multi-stage agentic translation and validation pipeline**, improving schema validation pass rate by **25.4%** and increasing model confidence/consistency by **18%**, while detecting overly permissive and unsatisfiable policies.
– **Built an end-to-end policy automation framework** that converts unstructured customer documentation into enforceable, deployable authorization policies for LLM agents, materially reducing onboarding time and manual security review effort.
– **Filed a patent** on a policy routing and ML-validated enforcement architecture that generates, verifies (via automated test synthesis), and enforces policies prior to tool execution.
– **Co-mentored an intern on LLM-based multi-agent systems**, contributing to an ACL-submitted paper introducing relational priors as a tunable MAS design variable and uncovering coordination-truth trade-offs.

Applied Scientist Intern — **Amazon.com, inc** | May 2024 - Aug 2024

– Developed MEAV, a novel inference-time LLM alignment technique enabling controllable behavior tuning without retraining.
– Curated a synthetic dataset of 38k annotated queries spanning medical, financial, and legal domains with multi-level expert, generic, and avoidant responses.
– Implemented dynamic alignment control by integrating alignment vectors into base model weights, achieving 12× faster adaptation than traditional fine-tuning methods.
– Demonstrated robust multidomain alignment through vector-based editing, enabling real-time adjustments

Graduate Research Assistant — ***University of Houston, TX*** | Jan 2021 - May 2025

– Led an impactful research initiative of developing a system that could leverage quantification of persuasion psychology and intelligent knowledge transfer, to improve web-based deception detection in various mediums, like, news, tweets, reviews, emails, and YouTube comments, using Machine Learning, Deep Learning, and Natural Language Processing.
– Performed data collection and processing, designed experiments and model training, and built Deep Learning systems based on cutting-edge technology, including Transformers, BERT, SBERT, CNN, and LSTM.
– Achieved a significant performance improvement of up to **18%** over cutting-edge methods, which led to **six** papers across renowned conferences including RANLP, SOCINFO, WBC (Best Paper), and SemEval.

Junior Data Scientist ***Global Data Management, NJ*** | Feb 2020 - Jun 2020

– Conducted Exploratory Data Analysis, cleaning, and processing of data, and built visualization and predictive analytics tools.
– Built an AutoML with the capability of performing regression and classification with explainable feature importance.

Graduate Assistant (Research and Teaching) ***University at Albany, SUNY, NY*** | Jan 2018 - Dec 2019

– Designed and constructed a conversation-history-guided novel emotion forecasting technique to enhance user satisfaction by facilitating timely machine responses for virtual agents. Built a classical Deep Learning-based system using BLSTM, and achieved a performance improvement of 4.81%. Published paper at a prestigious conference (FG'23).

EDUCATION

PhD in Computer Science
Jan 2021 - May 2025
University of Houston, TX

MS in Electrical and Computer Engineering
Jan 2018 - Dec 2019
University at Albany, SUNY, NY