Shaghayegh (Shirley) Shajarian

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EDUCATION

North Carolina Agricultural and Technical State University Jan 2023 – **Anticipated Graduation: May 2026**
Ph.D. in Computer Science; GPA: 3.93/4.0. *Greensboro, NC*
- Courses: Deep Learning, Big Data, Machine Learning and Data Mining, Emergent Networks, Advanced Algorithms, Operating Systems.

Science and Research Branch of Azad University Sep 2016 – Aug 2019
Master of Computer Software Engineering; GPA: 4/4 *Tehran, Iran*
- Courses: Data Mining, Big Data Analytics, Advanced Software Engineering, Software Architecture, Advanced Operating Systems.

University of Mazandaran Sep 2011 –Feb 2016
Bachelor of Computer Software Engineering *Babolsar, Iran*

EXPERIENCE

Instructor, *North Carolina A&T State University, Greensboro, NC* **Jan 2025 – Present**
- Taught AI and Machine Learning course

Graduate Research Assistant, *North Carolina A&T State University, Greensboro, NC* **Jan 2023 – Present**
- Developed research for a doctoral proposal on an AI-driven RAG-based framework for autonomous networks; *Publication: AAAI 2025*.
- Led research on an AI-driven framework integrating Retrieval-Augmented Generation (RAG) with Large Language Models (LLMs) to automate network log analysis, troubleshooting, and documentation; *Publication: ACM CoNEXT 2024*.
- Conducted a survey of self-running networks by reviewing 112 recent papers, analyzing opportunities and challenges, and identifying key research directions to advance the field; *Publication*.
- Collaborated with a team to review 127 relevant research papers on ML-based detection techniques and XAI approaches, analyzing current trends and providing key insights to guide future research in explainable malware analysis; *Publication*.
- Contributed to the malicious domains classification using transfer learning with ResNet50, achieving 98.67% testing accuracy; *Publication*.

Graduate Teaching Assistant, *North Carolina A&T State University, Greensboro, NC* **Jan 2023 – Dec 2024**
- Teaching assistant for AI/ML and Advanced Security courses.

Research Assistant, *Distributed Systems Laboratory, Azad University, Iran* **Dec 2017 – Sep 2019**
- Led weekly Distributed Systems group discussions and mentored students.

Undergraduate Internship, *Hashemi Health Center, Iran* **Jun 2014 – Sep 2014**
- Automated patient data analysis using R, utilizing data visualization techniques with Matplotlib to present health trends, reducing reporting time by 40% and improving data accuracy.

PROJECTS

Human Activity Recognition Using CNN **Dec 2024**
- Developed CNN model for multi-class activity recognition, achieving 93.21% accuracy on inertial sensor data.

Retrieval-Augmented Generation System for Document Query Answering **July 2024**
- Implemented a RAG system using LangChain and FAISS to retrieve the most relevant documents for a given query, followed by generating context-aware answers.

Predictive Analysis of Hospital Ratings Using PySpark **May 2024**
- Processed a large dataset to handle missing values and applied ML models, including Gradient Boosting using Scikit-learn, achieving an R^2 score of 0.87 in predicting hospital ratings.

Network Attack Simulation and Vulnerability Assessment **May 2024**
- Developed and tested network attack simulations in an SDN environment, evaluating vulnerabilities and countermeasures.

Malware Detection Using Convolutional Neural Networks **Dec 2023**
- Applied CNNs leveraging batch normalization and dropout techniques to achieve 93% accuracy in malware detection and tested robustness using the Fast Gradient Sign Method (FGSM) adversarial attack, resulting in a 25% drop in accuracy.

Hint Generation System for Programming Coursework Question Assistance **May 2023**
- Developed a system using BERT for multi-label classification on the Stack Overflow Code Corpus to provide relevant hints for programming questions and evaluated the model using Scikit-learn, achieving 92% accuracy in identifying relevant topics.

TECHNICAL SKILLS

Languages: Python, C++, R, HTML, CSS, PHP, SQL, MATLAB
Machine Learning Packages: Keras, PyTorch, Tensorflow, PySpark, Matplotlib, Scikit-learn, HuggingFace Transformers
Tools: GIT, MySQL, LangChain, LlamaIndex, LaTeX, RYU Controller Framework, OpenvSwitch, GNS3, Mininet, Scapy