Mozhgan Salimiparsa

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Machine Learning | Data Science | Generative AI | Large Language Models | Cloud Computing

Profile

Visionary and results-focused professional leveraging ML, AI, and data science expertise and hands-on experience in designing innovative solutions with real-world applications. Adept at collaborating with cross-functional teams of developers, researchers, healthcare, and other professionals, ensuring alignment with high-level goals. Skilled in using Tableau and Power BI to create data visualizations and enable data-driven decision-making. Committed to remaining abreast of industry trends, emerging technologies, and best practices.

Experience Highlights

Nomad XR – London, Ontario 11/2022 to Present

Data Scientist/Postdoctoral Fellow

Partner with developers, neuroscientists, and researchers at company designing eXtended Reality (XR) solutions to address unique challenges related to cognitive data analysis.

- Integrated academic research with industry applications by enhancing theoretical and practical aspects of cognitive studies as Postdoctoral Fellow on collaborative research between Nomad XR and University of Western Ontario's Culham Lab.
- Expanded understanding of cognitive processes by leading development and optimization of ML models for analyzing eye-tracking data to gain insight into correlations between eye movements and neurodevelopmental disorders.
- Designed 3D games and applications for virtual reality (VR) environments to analyze eye-tracking data using Unity, C#, and Plastics SCM for version control and code collaboration.
- Drove significant improvements to capabilities of core suite of products designed to analyze cognitive behavior by integrating AI/ML solutions.
- Contributed to building high-performing team by mentoring junior data scientists and engineers on data analysis, coding, and ML model deployment.

University of Western Ontario – London, Ontario 9/2018 to 9/2023

PhD Candidate, Research Assistant & Teaching Assistant

Planned and executed PhD research focused on building Explainable AI (XAI) system for healthcare using visual analytics. Served as teaching assistant for artificial intelligence, data analysis, algorithms, information systems, and multimedia courses. *Key projects:*

- **Bias Detection:** Increased equity and interpretability in healthcare decisions by designing and deploying visual analytics tool to assess bias in clinical decision support systems.
- **ICU Admissions:** Improved transparency and interpretabilty by leading development and implementation of triaging system for ICU admission utilizing XAI methodologies, including Shapley values and counterfactual explanations.
- **User Behavior Analysis:** Uncovered insights into online dynamics and human interaction patterns by creating interactive system to analyze Twitter (X) user behavior and relationships using natural language processing (NLP).
- **Question Answering System:** Used PyTorch, Spacy, and Picke to design NLP preprocessing pipeline for QA built on factoid question-answer approach.
- **Face Aging:** Used Geenerative Adversarial Networks (GANs), TensorFlow, and NumPy to build model and trained with four GPUs on single node.

Areas of Expertise

Machine Learning (ML)
Algorithm Design
Deep Learning
Deep Neural Networks (DNNs)
Convolutional neural networks (CNNs)
Artificial Neural Networks
Statistical Analysis
Natural Language Processing (NLP)
Large Language Models (LLMs)
Generative AI
Explainable AI (XAI)
Data Science
Data Analysis & Visualization

Technical Proficiencies

Programming: Python (NumPy, PyTorch, Spacy, Pickle), C/C++, R, MATLAB, PHP, SQL

Web Development: PHP, JavaScript, D3, HTML, CSS.

Framework: Generative Adversarial Network (GAN)

Technologies: Hadoop, MongoDB

Platforms/PaaS: Unity, TensorFlow, AWS (API Gateway, ECS, EC2, Lambda), GCP, Docker

Version Control: Plastic SCM, Git

LLM: OpenAI

Data Visualization: Tableau, Power BI

Education

PhD Candidate, Computer Science
University of Western Ontario – London, Ontario
Dissertation: An Exploration of Visual Analytic Techniques for XAI: Applications in Clinical Decision Support.

MSc, Health Information Technology
University of Tehran – Tehran, Iran

BSc, Information Technology
Hamedan University of Technology – Hamadan, Iran

- **Automated Customer Support System:** Boosted customer satisfaction by building automated customer support chatbot able to handle real-time inquiries with high level of accuracy using OpenAI's large language model (LLM); deployed via Docker container on AWS ECS for scalability/consistency and used Python for integration.
- **Sentiment Analysis Service:** Enhanced decision-making and reduced data processing time by developing sentiment analysis service using TensorFlow for model training, Docker for deployment on AWS, EC2 for hosting, and S3 for storage.
- **Image Recognition API:** Provided fast, accurate image classification by developing API to classify user-uploaded images using PyTorch convolutional neural networks (CNN), built in TensorFlow, Docker for AWS deployment, and Lamba and API Gateway for load balancing and security.

SpassMed Inc. – Toronto, Ontario 1/2023 to 7/2023

Machine Learning Engineer

Performed ML engineering, mentored junior team members, and facilitated knowledge-sharing on Explainable AI for MedTech company designing AI-driven medical devices.

- Played key role in deploying Casual Inference models under two-week deadline for Vector Institute by effectively managing project and leading five-member team of data scientists and engineers.
- Improved predictive capabilities and patient outcomes by leading classification and forecasting experts in developing machine learning model and writing paper on sepsis detection and prevention.
- Transformed underperforming model by using XAI methodologies to identify, analyze, and correct critical errors; results recognized and published at inaugural World Conference on Explainable Artificial Intelligence.

McMaster University – Hamilton, Ontario 4/2016 to 9/2017

Visiting Researcher

Developed signal processing techniques for phonocardiograph data, including simulation and anomaly detection.

Asar Company – Tehran, Iran 06/2015 to 01/2016

Web Developer

Performed hands-on web development in alignment with business requirements and detailed technical specifications.