Amirreza Sokhankhosh

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Highlight of Qualifications

- **Generative AI & LLMs:** Developed an **AI-powered grading system** using **GPT-4**, automating assignment evaluation and enhancing grading efficiency by **40%**, showcasing expertise in leveraging advanced language models for practical applications.
- **Machine Learning Engineering:** Designed, trained, and deployed **machine learning models** in production environments utilizing **TensorFlow** and **PyTorch**, improving model robustness and reliability through optimized end-to-end pipelines.
- **Deep Learning & Neural Networks:** Implemented and optimized **deep learning architectures** that improved scalability and efficiency for large-scale datasets, achieving results that enhanced fault tolerance by **62.7%**.
- **NLP & Computer Vision:** Developed a **paper summarization system** integrating **NLP** and **computer vision** techniques, increasing processing efficiency by **30%** while extracting valuable insights from complex text.
- **Cloud & DevOps:** Collaborated in an Agile Scrum environment to utilize **CI/CD** best practices while managing deployments in **Google Cloud Platform**, ensuring high-performance and reliable machine learning infrastructures.
- **Research & Innovation:** Authored multiple publications in top-tier venues, emphasizing a commitment to **cutting-edge machine learning research** and a proactive approach in proposing innovative solutions to complex problems.
- **Collaboration & Leadership:** Led cross-functional teams in data analysis and model development, effectively translating complex technical concepts for diverse stakeholders, thereby enhancing project outcomes through strong communication and teamwork.

Experience

University of Manitoba September 2023 – July 2025
Graduate Research Assistant *Winnipeg, Manitoba, Canada*

- Designed and developed **novel distributed AI architectures**, improving **scalability** and efficiency for distributed deep learning applications.
- Implemented and optimized **machine learning models** using **TensorFlow** and **PyTorch**, enhancing model performance and reliability in production environments.
- Conducted comprehensive **data preprocessing** and feature engineering, reducing communication overhead by **85.2%** and improving fault tolerance by **62.7%**.
- Monitored and maintained high-performance models, ensuring **scalability** and **reliability** through advanced optimization techniques.
- Authored research published in top-tier IEEE venues, demonstrating strong analytical skills and a commitment to **innovation in machine learning**.

K. N. Toosi University of Technology June 2021 – August 2022
Research Assistant *Remote*

- Led a research team in analyzing over **10GB of raw data** using advanced techniques, ensuring high data integrity for subsequent **machine learning** applications.
- Executed systematic **data cleaning** and feature extraction, prepared datasets crucial for building reliable models and enhancing analytical accuracy.
- Utilized **R** for causal inference analysis, providing insights into **data-driven solutions** that informed policy recommendations.
- Collaborated closely with faculty and peers, showcasing strong **communication skills** in translating complex findings into actionable insights for stakeholders.

University of Manitoba September 2024 – June 2025
Teaching Assistant *Winnipeg, Manitoba, Canada*

- Delivered academic support to over **400 undergraduate students** in foundational Computer Science courses, including programming with **Python** and data structures.
- Guided students through complex **coding projects**, fostering problem-solving strategies and showcasing deep understanding of **algorithms** and system design principles.
- Provided specialized technical assistance, effectively communicating complex concepts to both technical and non-technical audiences, enhancing the learning experience.

Sadr Group Company July 2020 – December 2020
Full-stack Developer Intern *Remote*

- Developed and enhanced **RESTful APIs** with **Node.js** and **Express.js**, significantly improving backend functionality for production deployment.
- Implemented **JWT authentication** mechanisms, ensuring secure and efficient access management across application functionalities.
- Collaborated in an Agile Scrum environment, effectively utilizing CI/CD best practices for seamless integration and deployment, aligning with modern **MLOps** practices.

Projects

Paper Summarizer | *Python, Flask, PyTorch, EasyOCR, Detectron2* | Code

- Developed an end-to-end academic paper summarization system leveraging **natural language processing** and **computer vision** techniques to extract, analyze, and summarize research papers.
- Implemented a **Flask-based API** to facilitate real-time text summarization and figure analysis using **vision-language models** and **large language models**, enhancing processing efficiency by 30%.
- Achieved a multi-modal analysis capability, incorporating **OCR** and **object detection** to identify document components with 70% confidence, significantly improving content extraction accuracy.

MarkMate | *GPT-4, Django, PostgreSQL, Python, Flask* | Code

- Developed an **AI-powered grading** system using **GPT-4** that automates assignment evaluation, enhancing grading efficiency for educators.
- Implemented a **Django REST API** with a **PostgreSQL** database, ensuring efficient data management and high-performance interactions for over 1000 student submissions.
- Optimized the grading pipeline to reduce processing time by **40%**, allowing instructors to focus on personalized feedback instead of manual grading.

CIFAR-10 Generative Model Evaluation | *Python, PyTorch, ResNet-50, Custom Metrics* | Code

- Developed a **generative model evaluation tool** that leverages **diffusion models** to assess image quality on the CIFAR-10 dataset using custom evaluation metrics.
- Utilized a **pre-trained ResNet-50 classifier** to extract features and compute **Precision**, **Recall**, and **F1 Score**, ensuring robust model evaluation techniques.
- Achieved a **15% improvement in F1 Score** over baseline models, demonstrating the effectiveness of the evaluation framework in measuring generative model performance.

PyFed | *Python, TensorFlow, Sockets, Threads, TensorBoard* | Code

- Developed a **federated learning framework** that supports **distributed model training** across multiple clients, enhancing model performance on large-scale datasets.
- Implemented a robust **client-server architecture** using **sockets** and **threads**, optimizing communication and reducing latency during model training.
- Utilized **TensorBoard** for real-time monitoring, allowing users to assess **model accuracy** and **loss metrics**, improving training efficiency by **25%**.

Education

University of Manitoba Sep 2023 – Aug 2025
Master of Science in Computer Science (GPA: 4.4 / 4.5) *Winnipeg, Canada*

- **Relevant Coursework:** Security & Privacy, Deep Generative Modeling, Blockchain & Distributed Systems: A+

K.N. Toosi University of Technology Sep 2018 – Feb 2023
Bachelor of Science in Computer Engineering

Technical Skills

AI / Machine Learning: TensorFlow, PyTorch, Keras, Scikit-learn, Transformers
Languages: Python
Cloud & DevOps: Docker, Git, GitHub, CI/CD
Databases: PostgreSQL, MongoDB, MySQL
Web Frameworks: *Back-end*: Django, Flask. *Front-end*: React
Tools & Methodologies: Jira, Confluence, Agile, Scrum