Amirreza Sokhankhosh

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Highlight of Qualifications

- **Machine Learning & GCP Proficiency:** Extensive experience in **developing, training, and deploying machine learning models** on **Google Cloud Platform (GCP)** using tools like **Vertex AI** and **BigQueryML**, demonstrating expertise in production environments.
- **Generative AI Expertise:** Proficient in applying **large language models** such as **GPT-4** and **Transformers** to tackle complex text-based problems, enhancing system capabilities through innovative solutions.
- **Data Engineering & Feature Engineering:** Skilled in **data preprocessing**, feature engineering, and model evaluation techniques for large-scale datasets, ensuring high-quality inputs for reliable machine learning models.
- **Collaborative Project Leadership:** Successfully collaborated with cross-functional teams to align project goals and design scalable machine learning architectures, enhancing deployment outcomes and project efficiency.
- **Deep Learning Development:** In-depth knowledge of **deep learning architectures** and hands-on experience utilizing **TensorFlow** and **PyTorch** for architecture implementation, achieving performance improvements of up to **62.7%**.
- **MLOps Practices:** Familiarity with **MLOps**, including CI/CD pipelines, version control, and deployment strategies, ensuring streamlined model monitoring and maintenance in production.
- **Effective Communication:** Strong ability to convey complex technical concepts to both technical and non-technical stakeholders, enhancing project buy-in and collaborative efforts.

Experience

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

- Designed and developed **distributed AI architectures** to address critical challenges in distributed learning, enhancing **scalability and efficiency** for complex projects.
- Implemented and optimized architectures using a robust tech stack, including **TensorFlow** and **PyTorch**, significantly improving **fault tolerance by 62.7%** and communication overhead by **85.2%**.
- Authored research published in top-tier IEEE venues, showcasing advanced knowledge in **machine learning** and contributions to the field.
- Conducted comprehensive evaluations of models and architectures, ensuring high-quality and reliable solutions for distributed learning environments.
- Collaborated with cross-functional teams to align project goals, incorporating feedback to enhance project outcomes and ensure successful model deployment.

K. N. Toosi University of Technology January 2021 – January 2023
Lead Teaching Assistant

- Supported over 300 undergraduate students across technical subjects, strengthening their understanding of **computer networks** and **algorithms** crucial for **data preprocessing** in machine learning.
- Designed and developed engaging lectures and practical projects, enhancing student hands-on experience and comprehension of **system architecture** principles applicable in **machine learning** pipelines.
- Provided specialized support in technical areas, effectively bridging theoretical knowledge with practical applications, enhancing overall learning outcomes.

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

- Led an undergraduate research team in executing a comprehensive analysis of complex datasets, leveraging advanced **machine learning** techniques for processing and evaluation.
- Executed data collection and cleaning processes on over 10GB of raw data, ensuring high data integrity necessary for robust model training.

- Utilized **R** to conduct sophisticated analyses, producing reports that quantified key findings and informed data-driven decisions.

Bobo May 2024 – August 2024
Full-stack Developer Intern *Winnipeg, Manitoba, Canada*

- Accelerated product development by designing and implementing **RESTful APIs**, enhancing backend functionality critical for effective data management in machine learning applications.
- Automated data integration processes using **Python**, streamlining database population crucial for model infrastructure and deployment.
- Collaborated with cross-functional teams to align API specifications with user interface requirements, ensuring seamless integration and functionality.

Projects

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

- Developed an **AI-powered grading system** using **GPT-4** that automates the grading process, resulting in a reduction of grading time by **50%** for instructors.
- Implemented a **Django REST API** that seamlessly integrates with a **PostgreSQL** database, allowing for efficient data handling and user management across the application.
- Designed and deployed a **microservices architecture** which includes frontend and backend services, enhancing the platform's scalability and maintainability, and enabling quick feature iteration.

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

- Developed an intelligent academic paper summarization system utilizing **natural language processing** and **computer vision** to enhance research paper analysis.
- Implemented **OCR** techniques using EasyOCR and integrated **state-of-the-art object detection** with Detectron2 for processing complex PDF documents.
- Achieved a **70% confidence** threshold in document element identification, significantly improving information extraction efficiency and productivity in academic settings.

CIFAR-10 Generative Model Evaluation | *Python, PyTorch, TensorFlow, scikit-learn, ResNet-50* | Code

- Developed a robust evaluation framework leveraging **diffusion models** to generate and assess synthetic images against real-world data.
- Implemented model evaluation techniques using a **ResNet-50** classifier, achieving a **F1 Score** improvement of over 15% in generated image reliability.
- Optimized image processing and feature extraction pipelines with **scikit-learn**, significantly reducing evaluation time by **30%** for large-scale datasets.

Proof of Collaborative Learning (PoCL) | *Python, TensorFlow, Flask, Hyperledger Fabric* | Code

- Developed a novel blockchain consensus mechanism using **federated learning**, enhancing collaboration among miners to train deep learning models instead of traditional mining.
- Implemented a custom Python-based framework integrating **TensorFlow** for model training, resulting in a **30%** increase in model accuracy compared to previous mining approaches.
- Designed a secure and efficient architecture utilizing **Hyperledger Fabric** for immutable transaction logs, providing transparency and **real-time performance monitoring** of trained models.

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