Amirreza Sokhankhosh

431-293-6515 amirreza.skhn@gmail.com LinkedIn GitHub Portfolio

Highlight of Qualifications

- **Machine Learning Engineering:** Proven expertise in developing and deploying **machine learning models** using **TensorFlow** & **PyTorch**, achieving a **62.7%** improvement in fault tolerance and enhanced energy efficiency.
- **Cloud Computing:** Extensive experience leveraging **Google Cloud Platform (GCP)** tools, including **Vertex AI** & **BigQuery**, for scalable **machine learning architectures** and efficient deployment of models in production environments.
- **Data Processing & Feature Engineering:** Proficient in data preprocessing techniques and feature engineering for large-scale text datasets, ensuring model integrity and quality through comprehensive **data cleaning** and **evaluation** methods.
- **Generative AI & NLP:** Solid background in exploring **generative AI** techniques and **NLP** methodologies leveraging large language models, including practical projects integrating **GPT-4** to enhance text processing efficiency.
- **Collaboration & Communication:** Effective in collaborating with cross-functional teams and communicating complex technical concepts to both technical and non-technical stakeholders, enhancing project alignment and execution success.
- **MLOps Practices:** Familiar with **MLOps** methodologies, including CI/CD pipelines for machine learning, enabling streamlined integration and deployment processes through tools such as **Docker** and **Git**.

Experience

University of Manitoba Sep 2023 – Jul 2025
Graduate Research Assistant *Winnipeg, Manitoba, Canada*

- Designed and developed **distributed AI architectures**, tackling challenges in distributed learning with a focus on **scalability** and **efficiency**.
- Implemented and optimized **machine learning models** using **TensorFlow** and **PyTorch** for AI development, improving fault tolerance by **62.7%** and enhancing energy efficiency.
- Authored research published/submitted to top-tier IEEE venues, demonstrating ability to convey complex technical concepts and contribute to the advancement of **generative AI** methodologies.
- Developed and tested the PoCL architecture, integrating **blockchain** technology to enhance **resource efficiency** in federated learning environments.
- Collaborated across teams to gather requirements and design **scalable machine learning architectures** for complex text-based datasets.

K. N. Toosi University of Technology Jan 2021 – Jan 2023
Lead Teaching Assistant *N/A*

- Guided over **300 undergraduate students** in complex technical subjects, enhancing comprehension in foundational areas relevant to **machine learning** and **data structures**.
- Developed practical coding projects that required **problem-solving strategies** and focused on algorithm efficiency, preparing students for real-world **AI challenges**.
- Designed engaging lectures that merged theoretical knowledge with practical applications, significantly improving students' readiness for technical roles.
- Provided specialized support in algorithm implementation and system architecture, bridging the gap between theoretical coursework and practical application.
- Facilitated technical communication in a collaborative learning environment, honing skills necessary for interacting with technical and non-technical stakeholders.

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

- Accelerated product development by designing and implementing **RESTful APIs**, enhancing backend functionality for machine learning applications.
- Automated data integration through a **Python** script to facilitate seamless management of large-scale text datasets, aligning with cloud deployment needs.
- Collaborated closely with the front-end team to ensure integration of API specifications met user interface requirements, displaying effectiveness in **cross-functional collaboration**.
- Utilized the **Atlassian suite** for project management, contributing to a cohesive **agile workflow** that enhanced team efficiency.
- Demonstrated problem-solving capabilities by tackling integration challenges, ensuring smooth deployment of features in a production environment.

K. N. Toosi University of Technology Jun 2021 – Aug 2022
Research Assistant *N/A*

- Led an undergraduate research team in a study on subsidy biases, applying **machine learning** techniques to analyze complex data gathered from government sources.
- Executed comprehensive data cleaning and preprocessing on over **10GB of data**, ensuring integrity and quality for advanced analysis in **research projects**.
- Utilized **R** for causal inference analysis, enhancing the understanding of **algorithms** and their impact on financial equity in machine learning deployments.
- Produced detailed analytical reports that quantified significant findings, showcasing skills in data visualization and technical writing.
- Demonstrated leadership and team management in a research context, effectively guiding peers in data-driven approaches to complex problems.

Projects

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

- Developed an **AI-powered grading system** using **GPT-4** that automates evaluation based on customizable rubrics, significantly improving grading efficiency.
- Implemented a **microservices architecture** with a **Django REST** API and **PostgreSQL** database, ensuring high performance and scalability for handling large datasets.
- Achieved an **85% reduction** in grading time for instructors, leading to increased satisfaction and more time for engaging with students.

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

- Developed an intelligent paper summarization system leveraging **natural language processing** and **computer vision** techniques for comprehensive **data extraction**.
- Implemented and optimized pipelines for **OCR text extraction** and **object detection** using **Detectron2** and **OpenCV**, achieving a **70% confidence** level in identifying document structures.
- Improved research efficiency by generating automatic summaries, reducing manual processing time by **up to 50%**, and enhancing accessibility for academic audiences.

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

- Developed a **diffusion model** to generate images, significantly improving **quality and realism** of outputs on the CIFAR-10 dataset.
- Implemented a feature extraction pipeline using a **pre-trained ResNet-50** model, enhancing evaluation accuracy with **custom metrics** such as Precision, Recall, and F1 Score.
- Conducted thorough **model evaluation** with metrics indicating a **15% increase** in alignment between generated and real samples, validating model effectiveness in real-world applications.

PyFed | *Python, TensorFlow, scikit-learn, Sockets, Threads* | Code

- Developed a **federated learning framework** that supports **multiple systems** and can execute **FedAvg** policy, enhancing scalability and flexibility.
- Implemented key classes **FL Server** and **FL Client** using **Python** and **TensorFlow**, enabling efficient communication and training across clients and server processes.
- Achieved a **30% improvement** in model training efficiency through optimization of socket connections and multi-threading architecture, resulting in faster convergence of the federated learning model.

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, Db2
Web Frameworks: *Back-end*: Django, Flask, Express.JS. *Front-end*: React
Tools & Methodologies: Jira, Confluence, Agile, Scrum