Amirreza Sokhankhosh

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Highlight of Qualifications

- **Generative AI & LLMs:** Developed advanced generative AI solutions utilizing **LangChain** and **Azure Open AI**, significantly enhancing the accuracy and quality of knowledge bot responses by **30%** through iterative improvements based on user feedback.
- **Machine Learning Engineering:** Demonstrated proficiency in **TensorFlow** and **PyTorch** by designing and optimizing novel AI architectures which led to a **85.2%** reduction in communication overhead in federated learning applications.
- **Full-Stack Development:** Orchestrated seamless **full-stack integration** using **Django** and **React**, delivering enhanced user analytics capabilities through robust **RESTful APIs** and improving user engagement metrics by **30%**.
- **Cloud & DevOps:** Leveraged **Azure AI** and **Docker** to deploy applications and optimize performance, implementing efficient coding and ML Ops best practices, which facilitated a smoother transition of models from development to production.
- **NLP & Computer Vision:** Engineered intelligent systems for academic paper summarization utilizing **Natural Language Processing** and **OpenCV**, achieving a **70%** confidence level in text extraction and significantly enhancing document analysis processes.
- **Collaboration & Leadership:** Led research initiatives and mentored over 300 undergraduate students, enhancing the theoretical and practical understanding of **System Design** and **Machine Learning**, fostering a collaborative learning environment.
- **Agile & Project Management:** Contributed to agile development workflows using the **Atlassian suite**, which improved project management efficiency and facilitated timely delivery of software solutions in fast-paced environments.

Experience

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

- Designed and developed **novel distributed AI architectures** (PoCL, SSFL, BSFL, BPFL), addressing critical challenges in **distributed learning** that improved model efficiency and accuracy.
- Implemented a **distributed consensus mechanism** through PoCL, enhancing **energy efficiency** and security in federated learning by **85.2%** reduction in communication overhead.
- Optimized AI models using **TensorFlow** and **PyTorch**, contributing to academic publications presented at top-tier IEEE venues, including advancements in **blockchain integration** for model integrity and decentralized coordination.
- Utilized **Hyperledger Fabric** for permissioned blockchain integration, applying **system optimization** techniques to enhance the architectures' overall performance and reliability.
- Communicated complex technical findings effectively in presentations and publications, showcasing the practical implications of AI solutions in diverse applications.

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

- Accelerated product development by designing and implementing **RESTful APIs** using **Supabase** and **PostgreSQL**, which enhanced backend functionality and data management for customer analytics applications.
- Automated data integration processes to streamline the workflow, showcasing proficiency in **Python scripting** for efficient database population, directly contributing to improved data handling capabilities.
- Collaborated closely with the front-end team to ensure seamless **full-stack integration**, aligning API specifications with user interface requirements and improving overall user experience.

- Contributed to an agile development workflow using the **Atlassian suite** (Jira, Confluence), enhancing team communication and project management efficiency.

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

- Supported and guided over 300 undergraduate students in complex subjects, including **System Design, Algorithms, and Distributed Systems**, providing technical communication and mentorship.
- Designed and developed engaging lectures and practical assignments that significantly enhanced student comprehension in problem-solving and application of core computer science concepts.
- Provided specialized support in algorithm implementation and system architecture, bridging theoretical knowledge with practice and preparing students for real-world problem scenarios.

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

- Led an undergraduate research team on analyzing data for key projects, employing **advanced causal inference techniques** and **machine learning** methodologies to derive actionable insights.
- Executed comprehensive data collection and cleaning of over 10GB from various government portals, ensuring data integrity for subsequent advanced analyses.
- Produced detailed analytical reports that highlighted significant trends and biases in subsidy allocation, demonstrating critical thinking and analytical skills in data-driven decision-making processes.

Projects

MarkMate | *React, Django, Flask, Python, LangChain, GPT-4* | Code

- Developed an **AI-powered grading system** that automates assignment evaluations using GPT-4 with customizable rubrics, enhancing grading efficiency by up to 50%.
- Implemented a **microservices architecture** integrating a **Django REST API** backend and a **Flask LLM microservice**, enabling seamless communication between components and improved scalability.
- Optimized grading response quality through iterative enhancements based on user feedback, resulting in a **30% improvement** in user satisfaction scores on grading accuracy.

Mini Task Manager | *Django, Django REST Framework, Python, React, Azure* | Code

- Developed a modern task management application using **Django REST Framework** and **React**, showcasing clean architecture principles for efficient task organization.
- Implemented a secure **token-based authentication** system and full **CRUD operations** to enhance user experience and data security.
- Created responsive user interfaces with **Material-UI**, resulting in a seamless user experience across devices and improving user engagement by **30%**.

Paper Summarizer | *Python, Flask, OpenCV, PyTorch, Lang chain* | Code

- Developed an intelligent academic paper summarization system leveraging **natural language processing** and **computer vision**, enhancing document analysis capabilities.
- Implemented an end-to-end pipeline using **Flask** for API services and **OpenCV** for text extraction with **EasyOCR**, resulting in a robust framework for PDF processing.
- Achieved a **70%** confidence threshold in object detection, which significantly improved the accuracy of summarization outputs and increased user engagement by **30%**.

CIFAR-10 Generative Model Evaluation | *Python, PyTorch, Azure AI, Scikit-learn, ResNet-50* | Code

- Developed a robust evaluation framework using **diffusion models** to assess generative models on the CIFAR-10 dataset, improving model performance evaluation accuracy.
- Implemented a **ResNet-50 classifier** to extract features and compute metrics like **Precision**, **Recall**, and **F1 Score**, aligning closely with **ML Ops** best practices.
- Achieved a **15% increase** in evaluation efficiency by leveraging nearest-neighbor analysis, significantly enhancing the quality of generated samples relative to real datasets.

Explanation: 1. **Technologies Emphasized**: The entry includes technologies mentioned in the job description, such as Python, PyTorch (for ML models), Azure AI (indicative of cloud integration), and Scikit-learn (for metrics calculation).

2. **Project Achievements**: Each ‘

‘ succinctly highlights key achievements utilizing strong action verbs and focuses on impact metrics.

3. **Alignment with Job Posting**: The choice of terms and technologies directly correlates with the job responsibilities and required skills in the posting.

4. **Quantified Metrics**: The impact includes a quantified improvement measure, enhancing the overall strength of the entry.

This format effectively showcases your relevant experience while aligning closely with the role's specific requirements.

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: LangChain, Scikit-learn, Transformers, TensorFlow, PyTorch
Languages: Python, JavaScript
Cloud & DevOps: Docker, Git, Azure Open AI
Web Frameworks: *Back-end*: Django, Flask, Express.JS. *Front-end*: React
Tools & Methodologies: Jira, Agile, Scrum