Mohammed-Khalil Ghali

65 Albert Street, Johnson City NY, 13790 github.com/khalil-ghali
mghali1@binghamton.edu (607) 312-8792 portfolio.mohammedkhalilghali.com
linkedin.com/in/mohammed-khalil-ghali-11305119b projects.mohammedkhalilghali.com

EDUCATION

Binghamton University, Department of Systems Science and Industrial Engineering, SUNY **Binghamton USA**
Master of Science in Industrial and Systems Engineering (GPA: 3.83) **Expected May 2024**

Al Akhawayn University in Ifrane **Ifrane, Morocco**
Bachelor of Science in Computer Science (GPA: 3.55) **June 2022**
Minor: Business Administration

RELEVANT COURSEWORK

Big Data Environment, Intro to AI, Software Engineering, Operating Systems, Computer Communication, Data Structures, Analysis of Algorithms, Multivariate Analysis, Operations Research, Engineering Project Management, Advanced Probability and Statistics.

RESEARCH EXPERIENCE

Watson Institute for Systems Excellence, Binghamton University **Binghamton, USA**
Generative AI and NLP Solutions Architect **May 2023 - Present**

- Designed NLP models for retrieval augmentation, sentiment analysis and healthcare data extraction using Falcon, Llama, and Flan-T5 as foundational architecture.
- Fine-tuned pretrained LLMs on domain and task specific datasets to enhance their performance and output accuracy.
- Achieved more than 80% reduction in LLM model size for faster inference and fine-tuning, through techniques such as pruning, quantization, knowledge distillation, and distributed training.
- Collaborated with interdisciplinary teams for an effective use of NLP and LLMs in healthcare and research through the development of AI-driven applications and publishing academic papers. www.huggingface.co/Mohammed-Khalil

Graduate Research Associate: Innovation Associates **August 2022 - Present**

- Built seven simulation models using Demo3D/FlexSim for the design validation and performance analysis of large-scale central fill pharmacies (CFPs) worth more than $100M.
- Analyzed system log data, incorporating demand distribution, order profile, and system failures, using statistical, time series, and machine learning techniques to inform decision-making.
- Proposed design alternatives for conveyor layout of CFPs with a total anticipated saving of $6M while sustaining their current operational performance.
- Designed and programmed the control flow of CFP stations to better align the simulated and the real production flow.

Graduate Research Associate: LockerRoom345 **August 2022 - June 2023**

- Contributed to the end-to-end development and launch of LockerRoom345 website, facilitating the provision of essential clothing to Binghamton area students through Dick's Sporting Goods donations.
- Helped in building a responsive React/Node.js website for optimal user experience and efficient admin operations. www.lockerroom345.org

Graduate Research Associate: Zebra Technologies **August 2022 - May 2023**

- Contributed to the design and management of a database that contains information about various processes improving the efficiency of the production line.

PROFESSIONAL EXPERIENCE

Center for Learning Excellence at Al Akhawayn University **Ifrane, Morocco**
CRLA Certified Mentor **August 2020 - May 2022**

- Monitored more than 50 mentees in their academic progress through frequent meetings and weekly one-on-one sessions.

- Helped more than 100 freshmen, sophomore, junior, and senior students in academic matters.

Holding Soraya, Arrawaj Foundation **Rabat, Morocco**
Security and Network Project Management Intern **June - August 2021**

- Worked on the installation of a hyperconverged infrastructure (Nutanix HCI) that will increase the production capability of the holding by up to 60%.
- Contributed to the setup of a Fortinet Web Application Firewall (WAF) to decrease DDoS attacks risk by 80%.
- Participated in the setup of a Fortinet Security Information and Event Management system (SIEM).

COURSEWORK PROJECTS

Big Data, and Machine Learning Project **Binghamton, USA**
Big Data Analytics Approach for World Cup Sponsoring Decision Making **September - December 2023**

- Leveraged a big data analytical approach for predicting World Cup games outcomes and provide data-driven recommendations for sponsoring decisions.
- Employed PySpark and Azure Databricks to efficiently process and analyze massive volumes of data, ensuring scalability and real-time insights for dynamic decision making.
- Delivered actionable recommendations on teams to sponsor based on the predictive analytics results for maximizing sponsorship ROI in the context of the World Cup.

Capstone Project **Ifrane, Morocco**
Virtual Desktop Based Infrastructure Analysis at AUI **December - May 2022**

- Performed a 360 degrees analysis of the AUI virtualized environment including the hyperconverged infrastructure.
- Designed solutions to improve the whole infrastructure based on the results of performance monitoring and analysis which led to virtual machines performance improvement by 20%.

AWARDS

Merit Based Scholarships

- Graduate Research Associate Scholarship, Watson Institute of Systems Excellence. **Binghamton, USA**
- Undergraduate Excellence and Merit Scholarship, Al Akhawayn University. **Ifrane, Morocco**

5x AUI School of Science and Engineering Dean's List

- Fall: 2019, 2021; Spring: 2020, 2021, 2022.
- Top 10 AUI computer science department cohort graduates.

TECHNICAL & RELEVANT SKILLS

Computer Tools and Technologies:

- **Cloud Computing:** Amazon Web Services, Microsoft Azure, Google Cloud Platform.
- **Big Data, Containerization and Version Control:** Cloudera, Hadoop, PySpark, Databricks, Docker, GitHub.
- **Database Management:** PostgreSQL, MySQL.
- **Data Centers:** Virtual Desktop Infrastructure, Hyperconverged Infrastructures, VMware.
- **Data Visualization:** Tableau, Streamlit, Chainlit.
- **Generative AI and Machine Learning:** LangChain, LLMs, HuggingFace, TensorFlow,Transformers, PyTorch, AutoML, Text Classification, Model Evaluation and Validation.
- **Programming Languages:** Python, R, Scala, Java, C.

Certifications:

- Data Science Essentials Suite : Binghamton University
- Generative AI Studio Fundamentals: Google Cloud
- Analyze Datasets and Train ML Models using AWS AutoML: Coursera
- Build, Train, and Deploy ML Pipelines in AWS using BERT: Coursera
- Generative AI with Large Language Models in AWS: Coursera
- AZ-900: Microsoft Azure Fundamentals: Microsoft

Languages: Arabic: Native, English: Fluent, French: Fluent, Spanish: Elementary Proficiency.