

Mohammed-Khalil Ghali

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EDUCATION

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

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

PROFESSIONAL EXPERIENCE

Lattice Semiconductor **Hillsboro, USA**
Data Scientist **December 2023 - Present**

- Developed and deployed end-to-end machine learning models for prediction, statistical analysis, and wafer maps pattern classification presented in a web application for foundry engineers
- Used generative AI and natural language processing techniques to solve complex text classification problems, enabling efficient information extraction and analysis
- Collaborated with cross-functional teams to identify business problems, gather requirements, and design innovative solutions leveraging cutting-edge data science and generative AI technologies
- Conducting extensive research to stay up-to-date with the latest advancements in machine learning, deep learning, and generative AI, continuously improving and expanding the company's data science capabilities

Watson Institute for Systems Excellence **Binghamton, USA**
Generative AI Solutions Architect **August 2022 - 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 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: 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

CONFERENCES AND PRESENTATIONS

HSPI Conference **Atlanta, USA**
Generative AI in Healthcare: Raw Medical Transcripts to Structured Forms **December 2023**

- Utilized LLMs and In-Context Learning to extract medical entities from raw medical transcripts and dictations for an automated form filling procedure
- Reduced manual labor for Nurses up to 90% allowing them to allocate more time for patients

IISE Annual Conference and Expo

Big Data Analytics Approach for World Cup Sponsoring Decision Making (May 2023) **New Orleans, USA**

- Used ML for predicting soccer games results and provided data-driven recommendations for sponsoring decisions

LLMs, Semantic Search, and Domain-Specific Knowledge for Multi-Document Querying (May 2024) **Montreal, Canada**

- Developed a novel methodology to query multiformat textual data using LLMs and Semantic Search

SCHOLARSHIPS & AWARDS

Merit Based Scholarships

- Graduate Research Associate Scholarship, State University of New York
- Undergraduate Excellence and Merit Scholarship, Al Akhawayn University

Awards

- 2nd place Nationally in DATA4GOOD Generative AI and Data Science Competition: Organized by Purdue University, Informs and Microsoft.
- Finalist in IISE international conference analytics and generative AI web app competition
- 5x School of Science and Engineering dean's list and top 10 AUI computer science 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, Snowflake
- **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:

- Build, Train, Deploy ML Models with BERT: Coursera
- 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