

Youssef Hussein



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Education

University of Minnesota | Ph.D. in Computer Science

September 2023 -Present

- Conducting research in large language models and scalable data systems for spatiotemporal data management.
- Recipient of the Grants to Advance Graduate Education (**GAGE**) fellowship for the year 2023/2024

The American University in Cairo | B.Sc. in Computer Engineering

September 2018 -June 2023

- Thesis: Basant A., ... & **Hussein, Y.** (2023). *GPU Accelerated Dataflow Analysis* (unpublished manuscript).
- Placed on the Dean's Honorary List in Spring & Fall 2021, Spring & Fall 2022 & Spring 2023.
- Received a fully funded merit scholarship from the AGFE foundation with a 3.5% acceptance rate.

Publications and Conferences Presentations

- **Hussein, Y.**, Hemdan, M., & Mokbel, M. (2025). *Large Language Models for Spatial Queries Analysis: A Tutorial*. Proceedings of VLDB Conference 2025.
- Huang, Y., Uribe, A., Eldahshoury, K., **Hussein, Y.**, Ogren, G., & Mokbel, M. (2025). *Polaris: An Interactive and Scalable Data Infrastructure for Polar Science* [Scalable Data Science]. Proceedings of VLDB Conference 2025.
- Huang, Y., Uribe, A., Ogren, G., **Hussein, Y.**, Eldahshoury, K., & Mokbel, M. (2025). *A Demo of POLARIS: An Interactive and Scalable Data Infrastructure for Polar Science* [Demo]. Proceedings of VLDB Conference 2025.
- **Hussein, Y.**, Hemdan, M., & Mokbel, M. (2025). *Large Language Models for Urban Mobility: A Tutorial*. Proceedings of the International Conference on Mobile Data Management (MDM).
- O. A. Hosny Sherif, ... A., & **Hussein, Y.** (2023). *Economic Land Utilization Optimization Model*. Sustainability, 15(3), 2594. <https://doi.org/10.3390/su15032594>
- Sakr, N., **Hussein, Y.**, & Farid, K. (2021). *Dual-criticality scheduling on non-preemptive, dynamic processors using RL Agents*. The Third International Workshop on Dynamic Scheduling Problems (pp. 57–62), Poznań, Poland.

Research Experience

Graduate Teaching Assistant | University of Minnesota

Feb 2025 – May 2025

- Teaching Assistant for CSCI5708: Architecture and Implementation of Database Management Systems.
- Supported 50 students through office hours, grading, and project guidance.

Graduate Research Assistant & Fellow | University of Minnesota

Sep 2023 – Present

- Building an extensible LLM-based system for trajectory operations; (pypi.org/project/KAFYTraj/)
- iHARP Project: Developed and demonstrated a live web portal (iharpv.cs.umn.edu) for querying and visualizing raster data to support polar scientists.

Junior Research Assistant & Research Engineer | The American University in Cairo Sep 2019 – Jul 2021

- Led development of an embedded system integrating four subsystems to support sustainable land farming
- Extracted and processed real-time agricultural data using BeautifulSoup and Pandas
- Built and evaluated RL models for dual-criticality scheduling using OpenAI Gym, RLlib, and TensorFlow
- Wrote 5,000+ lines of Python code and performed hyperparameter tuning with TensorBoard

Industrial Experience

Software Engineer Co-op | Dell Technologies

Mar 2022 – Mar 2023

- Developed vital C++ modules for Dell's 5G platform, directly contributing to production code bases
- Collaborated with Egypt- and Canada-based teams on server deployment, CI/CD pipelines, gRPC micro-services, and containerization of 30 modules using Docker & Podman

Programming Fundamentals Mentor | Udacity Inc., Emeryville, CA

Sep 2022 – May 2024

- Guided 60 students (ages 12–17) through the CS Fundamentals Nanodegree, delivering 900+ teaching hours over 15 weeks

Software Engineer Intern | Silicon Arena LLC, Cairo, EG

Aug 2021 – Oct 2021

- Served as Front-End Engineer in an Agile team building an open-source e-commerce site

Certificates & Awards

- GAGE Fellowship (2023 – 2024) – Grants to Advance Graduate Education, University of Minnesota
- Al-Ghurair Foundation Full Scholarship (2019 – 2023) – 3.5 % acceptance rate, AUC
- Dean's List, AUC – Fall 2021, Spring 2022, Fall 2022, Spring 2023
- 2nd Place, Economic Association Data Analysis Competition – Analyzed Egyptian Labor Market Survey with Python & Excel
- Google Cloud Qwiklabs ML Tracks (2021) – ML APIs, TensorFlow, BigQuery ML
- Coursera Certificates (2020 – 2021) – Intermediate Python, Intro to ML, TensorFlow Developer
- 1st Place, Single-Use Plastic Competition (2018) – Proposed campus plastic-reduction initiatives
- Regional Qualifier, Shell "Imagine The Future" Competition – Vision paper for Aswan City 2050

Skills

- *Languages:* C++, Python, VBA, MySQL, Shell Scripting
- *Tooling:* Docker, Podman, GoogleTest (unit testing)
- *Technologies:* HuggingFace Transformers, Scrapy, TensorFlow, OpenAI Gym, RLLib, Google Cloud Platform

Leadership & Community Service

Board Member & Building Coordinators Chair | Como Student Community Co-op MN Jul 2024 – Present

- Serving as liaison between residents and Co-op management through the Building Coordinators Committee, representing 13 buildings and 650+ residents

Founder & Organizer, Dell Learning Club | Dell Technologies

Apr 2022 – Present

- Co-ordinated a 4-person team to deliver monthly professional-development sessions across EMEA region (avg. 50 participants, 8+ countries)

Machine Learning Instructor | Google Developer Student Club, AUC

Aug 2021 – Dec 2021

- Introduced 40+ students to ML concepts, BigQuery, and Qwiklabs hands-on labs

Development Committee Member | AUC Student Union

Sep 2019 – Nov 2019

- Built SU website and integrated Twitter API using Anaconda, JavaScript, Node.js, Angular.js