Adam Sadek

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Expertise

- Artificial Intelligence (AI)
- Machine Learning
- Database Organization
- Data Science
- Natural Language Processing

Programming Experience

- Python
- SQL
- Java
- Assembly Code
- Haskell
- C
- r
- Racket
- HTML & CSS

Interests

Artificial Intelligence
Developing models and studying complex datasets to identify patterns that can offer groundbreaking solutions to complex problems.

Natural Language Processing
Building models for word frequency distribution analysis and language model word distribution.

Database Design
Designing entity relationship diagrams, relationship schemas, and data definition languages for databases.

Education

Illinois Institute of Technology (August 2020 - December 2024)
Master's in Artificial Intelligence | Bachelor's in Computer Science

- Graduate GPA of 4.0 and undergraduate GPA of 3.94: Dean's list all semesters.

Experience

LanzaJet - Artificial Intelligence Internship (June 2024 - August 2024)

- Independently developed a machine learning model to maximize yield out of LanzaJet's renewable fuel plant by optimizing sensor tag values.
- Built artificial neural networks and random forest regressors for yield prediction, using gradient ascent and genetic algorithms for yield maximization.
- Constructed generative AI workshops and developed use cases for different departments including engineering, finance, and technology development.

Pentair - Computer Science Internship (May 2023 - August 2023)

- Spearheaded design and optimization of an automated system for internal life cycle testing of Pentair water softeners.
- Conducted interviews with software, electrical, and IoT engineers, as well as product development team to collect data on life cycle testing.
- Diagrammed the system of inputs, outputs, sensors, internal/external devices, and functionality of the self-testing softener.

AdSmart - Startup Business (August 2023 - December 2023)

- Connected local businesses to university campuses to advertise to the student population.
- Interviewed and partnered with over 20 local businesses including cafes, restaurants, and barbers.
- Executed a deal with University athletic department for local advertising in gymnasium.

COM-IoT Technologies - Data Science Internship (May 2022 - August 2022)

- Using supervise.ly, annotated over 1,200 point cloud data frames made by a LiDAR focused on traffic objects such as cars, trucks, buses, pedestrians, and motorcycles.
- Performed LiDAR research assignments regarding U.S. autonomous vehicle companies utilizing LiDAR technology.

Projects

Naive Bayes Classifier for App Reviews (Natural Language Processing - Spring 2024)

- In Python, Implemented from scratch a naive bayes classifier to classify reviews as either negative or positive.
- Used binary bag of words with "add-1" smoothing for document classification.

Machine Learning on Hotel Booking Dataset (Machine Learning - Fall 2023)

- Implemented in Python and used libraries including seaborn, matplotlib, sklearn, keras, and tensorflow.
- Implemented neural network and random forest classifier to predict booking cancellations with 80% accuracy.

Genetic Algorithm & Simulated Annealing on Traveling Salesman (Advanced AI - Spring 2024)

- Implemented and evaluated both algorithms in Python using libraries such as pandas, numpy, and math.
- Evaluated how different parameters yielded different min/max/average cost of algorithm solutions.

SQL Banking System Database (Database Organization - Fall 2022)

- Using Java, PostgreSQL, JDBC and Docker, developed a desktop banking system application.
- UI included employee and customer pages, allowed for banking transactions, and stored user history.

Xv6 Lottery Scheduler and Mutex Lock for Threading (Operating Systems - Spring 2024)

- Using C, implemented a lottery scheduler, threading API, and mutex lock synchronization mechanism in xv6.
- Developed a deep understanding of the workings of a real OS and how it controls the CPU.