

Kareem Elhemaly

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EDUCATION

University of South Florida

Bachelor of Science in Computer Engineering

Tampa, FL

Spring 2026

PROJECTS

Huffman Code | C++, Binary Search Trees, Stacks, Maps

November 2024

- Designed and implemented a Huffman coding algorithm for **lossless data compression** achieving up to **70% compression rate** on text files with high character frequency disparity.
- Utilized binary trees, priority queues, and hash maps to encode and decode text with an **average time complexity of $O(n \log n)$** .
- Validated implementation with **95%+ test coverage** using the Catch framework to ensure algorithm accuracy and reliability.
- Reduced storage requirements by an average of **60% across tested datasets**, highlighting effective data compression capabilities.

Dijkstras Algorithm | C++, Data Structures, Graph Theory, Algorithms

September 2024

- Optimized Dijkstra's Algorithm implementation to compute shortest paths in **under 10 ms** for sparse graphs with 1,000 nodes and 10,000 edges.
- Achieved **scalability to 10,000 nodes and 100,000 edges**, ensuring execution **within 0.5 seconds**.
- Validated algorithm with **100% accuracy** using standard datasets and benchmark tests.
- Efficiently managed memory usage, consuming approximately **50 MB** for large graphs.

Arabicly | Python, Pandas, Tkinter, CSV

October 2024

- Designed and implemented a user-friendly interface using Tkinter, enabling intuitive navigation and interaction.
- Integrated a CSV-based word database managed with Pandas, enabling the efficient retrieval of **over 100 Arabic vocabulary entries** with **real-time updates**.
- Developed features such as word quizzes and flashcards to reinforce learning and assess user progress.
- Ensured cross-platform compatibility, making the application accessible on various operating systems.

EXPERIENCE

Math and Reading Tutor

March 2024 – Present

Kumon

Wesley Chapel, FL

- Instructed students in a wide range of mathematical concepts and reading comprehension strategies.
- Managed and updated student performance data using a cloud-based database.
- Designed and implemented weekly study plans and exam preparation schedules tailored to individual student needs.

AT&T Sales Associate

Nov. 2023 – Jan. 2024

Baymark

Tampa, FL

- Marketed and sold AT&T wireless lines and data plans to a diverse customer base.
- Assisted customers in creating new lines, upgrading existing lines, and troubleshooting technical activation issues.
- Delivered exceptional customer service to enhance user satisfaction and improve retention rates.

Lifeguard

March 2023 – July 2023

Seven Oaks Clubhouse

Wesley Chapel, FL

- Ensured the safety of residents at the community pool by monitoring activities and enforcing safety regulations.
- Coordinated with team members to maximize productivity and promptly address residents' needs.
- Conducted regular safety inspections and maintenance checks on pool equipment, the pool area, and the slide to maintain high-quality standards.

TECHNICAL SKILLS

Languages: Python, C/C++, SQL (Postgres), JavaScript, Typescript, HTML/CSS, Java, Swift

Frameworks: React, React Native, Next.js, Tailwind CSS, Node.js, Express, Flask, REST API, Angular, Vue, Django, Pytorch, Scikit-learn, Tensorflow, Matlab, NumPy, Matplotlib

Developer Tools: Copilot, RabbitMQ, GitHub, Docker, Google Cloud Platform, VS Code, PyCharm, Eclipse

Expertise: AI/ML, E-commerce development, fintech applications, cross-functional collaboration, full-stack, front-end, back-end