Abdallah Hasan

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Projects

Campus Meet Up Application | *C++*
- Designed a graph-based application that optimizes the route on college campuses for two friends to meet up
- Processed unfiltered OpenStreetMaps data, cataloging buildings, walkways, street details, and assigned weights accordingly to maximize accuracy.
- Implemeneted Dijkstra's Algorithm to optimize route efficiency and display the shortest distance to end user.

Arcade Style Shooting Game | *Python*
- Designed, Composed, and Engineered an old school RPG shooting game, which includes smart responding enemies.
- Implemented pygame to implement a colorful GUI, listen for keystrokes, and animate a 30 frames/second character movement.
- Optimized the program to remodel and fit the user's device for optimal visual and speed preformances

Search Engine | *C++*
- Engineered a Search Engine with features including token cleaning, gathering, and index construction from file.
- Leveraged sets and maps to implement a reverse indexing system, optimizing the search algorithm.
- Employed file handling techniques to extract information from a file containing URLs and associated data.

Hospital Application | *C++*
- Developed a dynamic application utilizing an AVL tree to manage incoming patient data in a hospital based on priority
- Implemented efficient tree balancing/re-balancing algorithms to ensure fast run-times and optimal efficiency.
- Employed Ruby in collaboration with Catch to enhance the development of the test harness and fortify test cases

Automatic Emailing Service | *Python*
- Engineered an automated emailing service using Python that integrated with email APIs for sending and receiving messages
- Implemented error handling and logging to ensure reliable and secure email communication

Experience

Researcher Summer 2023

College of Engineering
- Engineered a program to scan brain imaging and output a list of Descriptive Statistics based on the circumstance.
- Conducted research on the Bilateral Craniectomy Technique for In-vivo Photoacoustic Brain Imaging and Design and Application of Ultra-Wideband Ultrasound Transducer for Photoacoustic Imaging.
- Published in Applied Sciences and Biophotonics under Dr. Kamran Avanaki in Chicago.

Honors Data Structures Tutor August 2023 - May 2023

Honors College
- Dedicated 4 hours of face-to-face time per week to explaining in-depth concepts ranging from Data Structures and Algorithms to OOP
- Prepare lectures tailored to fit each student's need and organize personal notes to keep track of progress
- Offer guidance on effective study strategies, time management, and problem-solving techniques to enhance students' overall academic performance.

Technical Skills

Languages: Arabic, C++, C, Python, Java, JavaScript, React, HTML/CSS
Developer Tools: Unix Commands, GDB, Git/Github, Catch, JetBrains, Unity, AutoCAD, Inventor
Concepts: Dynamic Memory, Trees, Graphs, Priority Queue, Linked List, Test Frameworks, Classes and Objects, Maps, Sets

Education

University of Illinois Urbana Champaign Expected May 2026

Bachelor of Science in Computer Science *GPA: 4.00*
- **Relevant Coursework:** Data Structures and Algorithms (C++), Software Design (Java), Artificial Intelligence (Python)