Muhammad Umar Khan

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SUMMARY

Passionate and highly motivated software developer/engineer with expertise in programming, artificial intelligence, and machine learning. Highly proficient and comfortable in several languages and tools including Java, Python, HTML, and CSS.

EDUCATION

Wayne State University | Detroit, MI, USA **Jan. 2025 - Dec. 2026**
M.S. in Computer Science

University of Windsor | Windsor, ON, Canada **Sep. 2020 - April 2024**
B.S. in Computer Science with Software Engineering Specialization

TECHNICAL SKILLS

Languages: C, **Java**, JavaScript, **Python**, C++, SQL, HTML**,** CSS
Tools & Technologies: VSCode, NumPy, Pandas, Matplotlib, TensorFlow, PyTorch, Spacy, Pygame
Concepts & Methodologies: Machine learning, data structures, algorithms, software development.

EXPERIENCE

University of Windsor| Windsor, ON, Canada **April 2023 - Nov. 2024**
Research Assistant

- Assisted Dr. Luis Rueda in his research of image classification and segmentation with the use of Super Pixels
- Implemented Python to code a program to split an image into random clusters and identify the centroid using the Euclidean distance to grab all similar clustered pixels to be later identified as super pixels.
- Implemented a program that uses the Convolutional Neural Networks (CNN) and the Graph Convolutional Neural Network to identify the pixels on an image and explained how these two neural network models could be beneficial in our research.
- Implemented an SQL server and integrated it with Snowflake for data querying and processing and demonstrated how it can be used to ease the process of managing important data and information on our super pixels.
- Created a small-scale Python program and integrated it with Docker to further explain and demonstrate how coding a large-scale program can be effective and beneficial when within a virtual environment.

University of Windsor| Windsor, ON, Canada **Sep. 2022 – April 2024**
Teaching Assistant

- Hosted weekly office hours for a maximum of 3 hours per term, graded exams and enrolled in Data Structures & Algorithms, Database Management Systems, and Object-Oriented Programming using Java.
- Assisted in students' understanding in multiple concepts with regards to the course material as well as offering assistance for any problems and question related to assignment and coursework.
- Aided the professor and team of other graduate and undergraduate teaching assistants during an exam proctoring and lab for the term duration.
- Assessed and aided students capabilities within the course and helped them to gain a clearer understanding and improve their work performance.

VOLUNTEER

Community Services| Windsor, ON, Canada **May 2019 - June 2019**
Security Guard

- Directed and signaled drivers to an open parking spot while ensuring a smooth flow of traffic and no incidents.

- Analyzed instructions from managers and co-workers and implemented required processes leading to a 100% success rate.

PROJECTS

K-Means Market Basket Analysis | Java
- Developed a program using **K-Means clustering** and the **Apriori algorithm** to analyze large-scale market transaction datasets.
- Clustered customer transactions based on **purchasing behavior** to identify distinct buying patterns.
- Applied **Apriori** to discover frequent item sets and associations between products within each cluster.
- Done to extract insights to support **marketing strategies** and **product placement optimization.**
- Collaborated with a partner through the whole design and implementation.

Computer Calculator | C
- Created a simple calculator in C that handles arithmetic expressions and calculations such as addition, multiplication, subtraction, and division.

Pokémon Simulator | Java
- Created a simulator game between the user and the system to simulate a Pokémon battle with turns and moves.
- From a pre-given list, the user and the opponent are given a full team of 6 random Pokémon, each with a defined move set that functions as they do in the game, and deals respected damage to the other when used, with each Pokémon having their own health bar and specific power points on each move.

Aerial Shooter Game| Java
- Designed and developed a 2-level fixed shooter game featuring a **starter level** and a **boss battle.**
- Implemented gameplay mechanics including **enemy waves**, **boss AI**, and **player controls.**
- Created an engaging storyline where a lone commander battles enemy forces to achieve victory.
- Objective to defeat 20 enemies to clear the first wave and then defeat the boss all while maintaining the players health.

Car Escape Game | Python
- Developed a **2D fixed shooter game** with horizontal gameplay and a **scrolling background** for dynamic visual effect.
- Programmed enemy behavior, player controls, and victory/loss conditions to enhance gameplay.
- Designed a storyline where the player evades and defeats pursuing mercenaries to reach safety.
- Objective to defeat **20** enemies all while maintaining the player's health and **3 lives.** Victory is given when the enemies are defeated.

Paint Application | Python.
- Built a **Microsoft Paint–style drawing program** with core features such as freehand drawing, shapes, color selection, and erasing.
- Integrated **Assassin's Creed–themed backgrounds** as optional canvases and included **character stamps** for creative customization.
- Designed a user-friendly GUI and implemented drawing tools and image manipulation features.

Sonic Shooter Game | JavaScript
- Developed a **2-level shooter game** featuring a main enemy wave and a challenging **boss fight against Dr. Eggman**
- Designed gameplay elements including **limited lives**, **environmental hazards** (e.g., background fire), and increasing difficulty.
- Created a storyline where Sonic defends his home and saves his planet through combat-driven progression.
- Collaborated with a partner through the whole design and implementation.

Space Invaders | JavaScript
- Designed and developed a **classic-style fixed shooter game** inspired by *Space Invaders*, featuring enemy waves and a **final boss battle.**
- Implemented **scoring system**, player controls, and win/lose conditions to enhance gameplay.