Mahmoud **Abu Jayyab**

Software Engineer

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Education

University of Alberta | BSc with Specialization - Computing Science **Jun 2022**

- **Major GPA:** 3.6
- **Awards:** with Distinction degree honors, Dean's Honor Roll 2018-2019 and 2021-2022.
- **Relevant Courses:** Python and C/C++ Programming, Algorithms and Data Structures, Database Management Systems, Software Engineering, Software Quality, Game AI, Visual Recognition, Web Applications, and Computer Architecture.

Technical Skills

Programming Languages: C/C++, Python, Java, JavaScript, C#, MIPS
Technologies: Django, Git, HTML5, CSS3, SQL, PostgreSQL, Docker, JUnit, Selenium, React, Gradle, Firestore, XML

Projects

Learning Guides | A web app for viewing short courses **Apr 2022**

- **Built** a web app for a client while actively partaking in all stages of the software development cycle and utilizing **SCRUM** with an **agile** software process model.
- **Implemented** and **tested** core functionalities including authentication and viewing courses.
- **Led** UI/UX design and created wireframes while leveraging feedback from the client as well as team members.
- **Leveraged** the Django web framework, HTML, CSS, JavaScript, PostgreSQL, Selenium and GitHub.

Tartan Smart Home | A smart home system **Apr 2022**

- **Implemented** new features for a pre-existing system written in **Java** by following a **Test-Driven Development** approach.
- **Achieved** 100% code, branch, and mutation test coverage by writing unit and integration tests for pre-existing code as well as new code.
- **Leveraged** many software quality assurance tools including SonarQube, SpotBugs, PMD and ErrorProne, as well as build tools like Gradle and Docker.

Hollow Heap Implementation | A more efficient heap than the standard binary heap **Apr 2022**

- **Implemented** an efficient hollow heap data structure in **C++** by referring to its original research paper.
- **Improved** Dijkstra's algorithm worst case run time complexity from O(|E|log|V|) to O(|E|+|V|log|V|) on large dense graphs by using this implementation of a hollow heap.

Smartbot | A bot for Starcraft2 **Dec 2021**

- **Built** a Starcraft2 bot in **C++** that **achieved** a **91%**-win rate against the in-game AI, and **placed** 4th in a tournament against 12 other Starcraft2 bots, by utilizing **a finite state machine** AI technique.
- **Designed** and **implemented** a greedy structure-placement algorithm that finds a valid and optimal placement location for in-game structures.

PocketBook | An android app for borrowing and lending books **Dec 2020**

- **Built** an android app that allows users to list their books and lend them to other users while working in a team.
- **Leveraged** OOP in java, Android studio, Firestore, JUnit, Selenium and GitHub.

Volunteering Experience

Software Developer **Apr 2022 - Present**
Imagine Cities
A non-profit organization dedicated to preparing communities for the future

- **Integrated** the learning guides app into the organization's software eco-system.
- **Implemented** a system to manage staff permissions between different applications within the organization.