

# AHMED BILAL

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**TECHNICAL SKILLS:** **LANGUAGES:** C, C++, JavaScript, Kotlin, Java, Python, Processing, TypeScript  
**FRAMEWORKS/TOOLS:** Angular, Vue, React, Ruby on Rails, Flask, NumPy, OpenCV, JavaFX, Android  
**DATABASES:** MongoDB, PostgreSQL, Redis, MySQL

## WORK EXPERIENCE

### Christie Digitals • Software Engineer | Waterloo, ON |

Sept 2022 - Dec 2022

C++ | OpenCV | Eigen | React | Redux | Express | MongoDB | Docker

- Developed Single-Shot Test Pattern (SSTP), an **RGB** grid test pattern for **Mystique** software to accurately calibrate in **2D/3D projection-camera** mapping, resulting in a **90%** increase in efficiency.
- Implemented **striding** for **SSTP's** grid colours to eliminate conflicts in **SSTP's** intrinsics, improving decoding by **80%**, using **OpenCV's** blob detection, colour segmentation, and image thresholding.
- Utilized **Eigen** to apply bi-directional space **geometric distortion models**, to identify and filter incorrect geometric correspondences, improving geometric correction by **70%**.

### Verto Health • Software Engineer | Toronto, ON |

Jan 2022 - May 2022

Ruby on Rails | Angular | Vue | Flask | Redis | PostgreSQL | Docker | Kubernetes

- Designed the **Digital Twin platform** to support the **workflow** of self-collected **COVID-19** PCR tests, serving **5M+** patients and increasing client satisfaction by **90%**.
- Developed a mobile **health card scanner** to authenticate patients' appointments, reducing fraudulent online bookings by **60%**.
- Integrated **Brakeman** into **CI** pipeline for detecting security vulnerabilities, increasing security stance by **10%**.
- Reduced **API** endpoint latency by **80%** through refactoring lazy-loading, and fixing '**N+1**' **SQL** queries.

### Building Blocks • Software Developer | Vancouver, BC |

April 2021 - Oct 2021

React | Redux | Node | Express | MongoDB | Postman

- Integrated **JWT** stored on **HTTP-only cookies** using **express** middleware, improving user security by **80%**.
- Leveraged **socket.io** for creating chatrooms, allowing real-time interaction between **mentors** and **mentees**.
- Built email automation using **Nodemailer**, notifying users about new events, increasing web traffic by **40%**.

### Broadridge • Software QA Analyst | Toronto, ON |

May 2021 - Sept 2021

- Performed **500+** functional, regression, positive & negative testing for Broadridge's **R.Broker** software.
- Designed test cases throughout **SDLC** in an **Agile/Scrum** environment, while maintaining testing standards.

## PROJECTS

### YouTracker | JavaScript | React.js

Jan 2023 - Feb 2023

- A **chrome extension** using **Google YouTube Data API v3**, allowing viewers to see the performance of the channel and video they are viewing.

### Straights : Poker Hand | C++

Nov 2021 - Dec 2021

- A game of poker cards with **AI** opponents of varying difficulties, utilizing **SOLID** principles to ensure scalability.

### Virtual Health | Processing | Java Mode

Sept 2020 - Oct 2020

- A platform for doctors-patient interaction and viewing patients **circle of care**, using the **OOP** paradigm.

### Bacterial Plus | Processing | Java Mode

Feb 2020 - Mar 2020

- Observes generational changes in bacterial conjugation for **3** different environments & up to **10,000** bacteria.

## EDUCATION

### University of Waterloo • Bachelor's in Computer Science

Sept 2020 - Sept 2024

- Cumulative GPA: 3.7/4