Uzma Ferdous

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EDUCATION

University of Toronto, B.A.Sc. in Computer Engineering *2021 – 2026 (Expected)*

- Awarded Dean's Honour List (2021 Fall, 2022 Fall, 2023 Fall)
- ***Relevant coursework:*** Algorithms & Data Structures, Operating Systems, Software Design and Communication (C++), Applied Fundamentals of Deep Learning (Python), Programming Fundamentals (C++), Probability & Applications
- ***Clubs****:* UTEK Programming Director, WISE Professional Development Marketing Director, ECE Ambassador

SKILLS

Languages	C/C++ • Python • HTML/CSS • JavaScript • Verilog HDL • Assembly (ARMv7) • Java
Frameworks/Libraries	React.js • Node.js • PyTorch • OpenCV • NumPy • Next.js • Express.js
Tools	AWS • Google Cloud Platform • Firebase • MongoDB • Docker • Git • Jira • Confluence

EXPERIENCE

Computer Vision Team Member, University of Toronto Robotics Association *August 2023 – present*

- Developing deep learning algorithms for autonomous rover to detect obstacles using **Python**, **PyTorch**, and **OpenCV**.
- Applying AI model training techniques (K-fold validation) and various loss functions (Mean Squared Error, Cross-Entropy Loss) in conjunction with Convolutional Neural Networks for robust 2D object detection.

Software Developer, University of Toronto Engineering Society *May – September 2023*

- Collaborated in a **team of 6** to upgrade and add functionalities to full-stack engineering orientation website used by **1000+** incoming students with **React.js**, **SASS**, **Express.js**, **MongoDB**, **Redux**, and **Docker**.
- Implemented account verification and subscription system using **AWS Simple Email Service** and JSON Web Tokens.
- Wrote backend unit tests for service functions, utilizing Jest to reduce production bugs with **90%+** of code coverage.

Infrastructure & Cloud Operations Intern, Questrade Financial Group *May – August 2023*

- Leveraged **Jira** and **Confluence** to plan and streamline change request workflows and create setup, maintenance, and troubleshooting guides for tools such as Google Cloud Platform, Pure Storage, and other cybersecurity software.
- Managed IP address updates for Cohesity backup services using **Google Cloud Platform** (GCP) and **GitLab**.
- Streamlined CMDB with tools such as Device42, vSphere, and SolarWinds to correct device inventory records and generate detailed reports for optimizing resource allocation, improving accuracy of asset tracking by **5%.**

PROJECTS

'Uzma's Art Shop' – Full Stack eCommerce Website (Link → GitHub) *May – July 2023*

- Designed a full-stack e-commerce website to display my paintings using **React.js**, **Next.js**, and **Styled-Components**.
- Integrated **React hooks** so users can add products to 'cart' and navigate to checkout page built using the **Stripe API**.
- Used **Google Cloud Platform**, **MongoDB**, and **AWS S3 Buckets** for storing account, order, and resource information with **CRUD** functionalities for features such as product reviews and user favourites.

Scavenger Hunt GIS *January - April 2023*

- In a **team of 3**, created a GIS in **C++** to extract information from the **OpenStreetMap API** and store street intersections, points of interest, natural features, and transit data from over 8 billion graph nodes.
- Implemented a **Trie** data structure and integrated it alongside **STL data structures** to optimize autocomplete searching and zoom rendering, increasing overall GIS responsiveness by over **20+** frames per second.
- Secured **4th** out of 90 teams on course leaderboard for our 'Travelling Courier Problem' algorithm involving **Multi-target Dijkstra**, **simulated annealing**, and **two-opt** operations, leading to a **4%** better solution than the benchmark.

ARMv7 Battleship (GitHub) *April 2023*

- Developed an interactive Battleship game in **C** for the **DE1-SoC** board with user interface on the VGA display.
- Configured the Generic Interrupt Controller (GIC) to handle interrupts from user input for multiple I/O Devices including DE1-SOC board pushbutton keys and switches, and an external PS/2 Keyboard.
- Utilized the A9 Private Timer to measure and display player turn countdowns and control gameplay animations.