Zakariya Arale

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TECHNICAL SKILLS

Languages: Python, Java, C, HTML, CSS, JavaScript, Bash/Shell scripting
Frameworks & Libraries: React, Tailwind, Pandas, Scikit-Learn, Matplotlib
Tools & Technologies: Git/GitHub, Linux, VS Code, Jira, Socket Programming, Asynchronous Programming, Android Studio
Concepts & Skills: Object-Oriented Programming (OOP), Data Structures, Algorithms, Machine Learning, SDLC, Scrum, Agile Methodologies

EDUCATION

Honours Bachelor of Science (CSC Co-op) **2024 - Present**
University of Toronto Scarborough, Toronto, ON

- Software Engineering Co-op + Math Major (GPA: 3.98)

EXPERIENCE

Teacher Assistant (MATA22 - Linear Algebra I) **Jan 2026 - Present**
University of Toronto

- Facilitate weekly tutorials for 30+ students, delivering lessons on core concepts including Vector Spaces/Fields, Linear Transformations, and Eigenvalues/Eigenvectors
- Mentor students during office hours, guiding them through complex proofs, demonstrating detailed calculation steps, and helping them write clear, well-structured solutions to enhance their mathematical problem solving skills
- Assess and grade coursework, providing constructive feedback to help students improve their responses and deepen their understanding of linear algebra

RBI SE Coach **Jun 2024 - Aug 2024**
Jays Care Foundation

- Led daily athletic programming for 20+ youth, utilizing de-escalation and problem solving strategies to promote a safe and inclusive camp environment
- Collaborated with coaches to plan and run various sports activities in a tight time constraint, developing project planning skills while delivering captivating athletic activities for campers

PROJECTS

Zakariya-Website | HTML, CSS, JavaScript , React, Tailwind CSS **Dec 2025 - Jan 2026**

- Designed a responsive personal portfolio website using React and Tailwind CSS, showcasing projects, technical skills, and testimonials
- Built interactive UI components including interactive project cards and animated transitions, improving site navigation and user experience
- Modularize UI modules (Button, Navbar) using SOLID design, resulting in code redundancy being minimised by 10% while improving code readability and maintainability

SmartAir | Java, XML, Android Studio, OOP, Firebase, Scrum, Jira **Nov 2025 - Dec 2025**

- Collaborated in a team of 5 members to design a healthcare management application enabling parents to manage asthma related data while allowing children to interactively log and visualize lung performance metrics
- Recognized as one of the top 8 projects in a class of 200 students and selected by a healthcare agency for use of the application code
- Served as Scrum Master by planning 3-sprints, organizing tasks, and coordinating a team, resulting in the delivery of 100% of requirements within 3 weeks
- Implemented respiratory metric logging (PEF and PB), triage logging, and automated PDF exports designed for clinical review and diagnostic support

Async_Battleship | C Linux **Jul 2025 - Aug 2025**

- Engineered an asynchronous game server in C, using I/O multiplexing and non-blocking sockets to build an asynchronous server, supporting 100+ concurrent users with minimal delays
- Optimized server management by using various data structures to track players coordinates and ship status, minimising memory usage by 20% during realtime broadcasts
- Strengthened system reliability by implementing error handling and resource management for handling invalid inputs and unexpected client disconnections, significantly improving server uptime

Cardio_Predictor | Python Scikit-Learn Pandas **May 2025 - May 2025**

- Implemented a Random Forest Classifier to predict cardiovascular disease risk based on a patient's health data resulting in a model with 23% higher accuracy than baseline model
- Applied controlled train/test splits and evaluated model performance using confusion matrices, accuracy, and classification reports to effective select the best predictive model

AccountSim | Java **Jan 2025 - Feb 2025**

- Designed and implemented a bank simulator using Object-Oriented design in Java leveraging classes to securely store account information and transactions resulting in a robust banking simulator
- Applied the software development cycle to test and improve storage usage and runtime using Object-Oriented design resulting in a 30% improvement in runtime and storage usage
- Designed and implemented various algorithms to effectively validate user information enhancing the security and reliability of a banking simulator

Budget_Manager | Python **Dec 2024 - Jan 2025**

- Engineered a personal budget manager in Python, enabling users to add/remove expenses, priorities expenses, and exports simulating a real world financial management tool
- Utilized various data structures and algorithms including tuples, compacted lists, and reusable functions to optimize storing users' budget and expenses resulting in 20% reduction in storage usage
- Applied input validation with regex to enforce correct monetary values, strengthening error handling and improving reliability of the financial tool