Mackenzie Dy

https://github.com/dymackenzie

Email : mackenziedy@hotmail.com

Mobile : +1 (672) 513-8820

TECHNICAL SKILLS

- **Programming Languages:** Java, Python, JavaScript, C++, C, C#, R, HTML, CSS
- **Software:** JetBrains IntelliJ, Visual Studio Code, Godot, Node.js, Git, Github

EDUCATION

- **University of British Columbia** — Vancouver, British Columbia, Canada
  Bachelor of Science in Computer Science — *Sep. 2022 - Present*

TECHNICAL PROJECTS

- **2D Typing-Based Dungeon Game**
  C#, Godot, Python, GIMP — *Dec 2023 - Present*
  - Designed and developed a 2D typing-based game through the game engine Godot using C#.
  - Parsed a database of 10,000 words through the Pandas library as a data bank for the game.
  - Implemented concepts such as game loop theory, interactive graphics through pixel art, progressive difficulty, and a score system for increased engagement.
  - Invented a new combat system that incorporates typing and movement using only the keyboard to play the game.

- **Personal Portfolio**
  HTML, CSS, JavaScript, Node.js, GSAP, Figma — *Sep 2023 - Dec 2023*
  - Designed and developed a website with HTML and CSS through Node.js to host personal projects.
  - Implemented interactive scrolling effects through GSAP and JavaScript.

- **Chess Bot**
  Python — *Nov 2023*
  - A simple, but relatively powerful alpha-beta chess engine that implements a custom graphical user interface built using Python's Tkinter.
  - Wrangles a tab-separated file through Pandas into a format that the engine can use.
  - To encourage diversity of moves, it contains a database of over 3000 openings which the computer will pick at random every time a new game is played.
  - The chess bot fares well against another bot ranked 1700 in rating on lichess.org.

- **Physics Engine**
  Java, JUnit, IntelliJ, Swing — *Sep 2023 - Dec 2023*
  - Produced a custom two-dimensional physics engine that simulates rigid-body physics in a virtual environment such as collisions, force, and momentum of basic shapes.
  - Each class and method is thoroughly tested through JUnit.
  - Included a custom canvas to visualize physics as well as custom menu buttons to save, load, and reset the state of the engine.

- **Data Science Project**
  Jupyter Notebook, Python — *Sep 2023 - Dec 2023*
  - Analyzed a dataset of patients with heart disease to determine which pair of variables affects the death event the most through machine learning and data frame manipulation.
  - Thoroughly researched and referenced the topic to first come up with an hypothesis to validate or invalidate with the results.
  - Included graphs through the Python library altair to increase readability and the flow of the report.

Experience

Self Employed — Richmond, British Columbia, Canada
Private Math Tutor — *Nov 2023 - Present*

- **Tutoring:** Conducted one-on-one tutoring sessions with a Grade 9 student, covering topics ranging from algebra, geometry, and finance.
- **Lesson Plan:** Prepared individualized lessons based on the student's goals, leading to a consistent report of "proficiency" in tests.
- **Communication:** Maintained contact with the student and their parents with feedback regarding the challenges and areas of improvement.

Kumon North America, Inc. — Richmond, British Columbia, Canada
Math and English Tutor — *Sep 2022 - Apr 2023*

- **Tutoring:** Worked with around 30 students of different ages with questions on Mathematics and English with skill levels ranging from K-12, including topics of geometry, algebra, trigonometry, and calculus.
- **Teamwork:** Cooperated with other such tutors to ensure that questions were answered quickly and that every student was attended to as an individual.
- **Methodology:** Guided students through the process as systematically and fundamentally as possible in a personalized manner, focusing on the "why" and "how" it works.

Creation Point Media — Maple Ridge, British Columbia, Canada
Film and Tech Intern — *Jun 2021 - Sep 2021*

- **Company Website:** Spearheaded the team project to reengineer the company website with more than 90 pages, focusing on including a more immersive user experience through interactive graphics and multimedia content through Javascript, HTML, and CSS.
- **User Interface:** Worked with user testing and team supervision to ensure that text and graphics produce engagement and user satisfaction.
- **Marketing:** Collaborated with the production team to embed promotional videos and marketing descriptions to increase engagement and viewership.
- **Production:** Filmed and produced a short film documentary on a profit-free bread donation organization to showcase company equipment and software capabilities.

Technical Extracurricular Activities

Langara Hacks! — Vancouver, British Columbia, Canada
HTML, CSS, Firebase, JavaScript — *Sep 2023*

- Brainstormed a project that aids international students in their search for relevant clubs and groups to connect with.
- Created a website hosted virtually on Firebase with a tag search filter implemented through JavaScript and relevant data with hyperlinks.
- Showcased this model through a PowerPoint presentation to a panel of judges, gaining entrance into the finals.

Game of Apps — Vancouver, British Columbia, Canada
Java, Figma, XML, Firebase, Android Studio, NoSQL — *Jan 2021*

- Conceptualized and produced a full-stack Android app using Java and Android studio with a group of 4 other people to enable networking for new immigrants in the course of a whole school year.
- Implementation with Firebase for profile picture storage, account information, and account authentication.
- It hosts its own direct messaging system with history and real-time updates with NoSQL.
- Collaborated with the designers on the team to create and showcase a clean and custom UI/UX designed by Figma that is readable and easy to navigate.
- Developed a unique algorithm using weights and similarities that ranks users based on compatibility.
- Implemented a networking system where friend requests can be sent and declined.