Nabil Mansour

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Experience

Software Engineer Jan 2023 – April 2023
Fairly AI *Toronto, ON*
- Transformed various Python functions and code into a reusable, **pip-installable** Python library, leading to increased efficiency in code maintenance and faster implementation of future extensions to the project.
- Implemented dataset and AI model verification functions that evaluate the potential risk of datasets and AI models.
- Optimized and restructured **Streamlit** application and multiple **Jupyter** notebooks to enable dynamic compatibility with any dataset and AI model, resulting in enhanced flexibility and improved user experience.

Full Stack May 2022 – August 2022
Fairly AI *Toronto, ON*
- Revitalized and redesigned the database for the back-end, and implemented a secure authentication system utilizing **Oso**, resulting in enhanced data integrity and improved system security.
- Developed a department system to organize users within an organization using **React** and **Flask**.
- Restructured Data Validation processes and implemented innovative techniques to efficiently manage **Big Data** using **Dask**, resulting in increased accuracy and speed in data processing and analysis.

Research/Teaching Assistant May 2021 – May 2022
Toronto Metropolitan (formerly Ryerson) University *Toronto, ON*
- **Developed** an auto-marking program in **LISP** that runs student programs and grades them automatically while also reporting any problems and handling any raised errors in their programs.
- Redesigned and modified CPS 305 (**Data Structures**) labs by following the instructions of the first drafts of the labs and providing solutions for them as supervised by Professor Marcus Santos.
- Administered weekly tutorials, Read and critiqued students' code, and provided guidance for writing more efficient and readable code by discussing with them good standards and practices.
- Also TA-ed in other courses like CPS 506: **Comparative Programming Languages** where students learned the difference between various programming languages and their paradigms.

Projects

Shaders | *GLSL* **ShaderToy profile**
- Made various shaders that utilize signed distance fields for rendering different mathematical shapes.
- Some shaders visualize **3D raycasted objects** and others visualize mathematical concepts like the **Mandelbrot set**.

Fractal Explorer | *C#, HLSL, Unity Game Engine, MonoBehaviour, .NET Framework* **GitHub**
- Created a VR experience where the player explores an endless fractal world made with the ray marching algorithm implemented as an extension to the unity game engine renderer.
- Made as a final project for the VR course CPS 643 at Toronto Metro. University with a final grade of **A+**.

Slime Simulator | *Python, ModernGL, GLSL, imgui* **GitHub**
- Implemented a slime mold cellular automata simulation that showcases the emergent behavior of slimes.
- The purpose of this project is to learn how to utilize compute shaders in an effective manner and be able to use them in a rendering pipeline.

Technical Skills

Languages: Python, TS/JS, HTML5, CSS, C/C++/C#, GLSL, HLSL
Frameworks and Libraries: Pytorch, Numpy, Pandas, Dask, OpenGL, ModernGL, Node.js, React, Material UI, Cypress, Redux, Socket.io, Flask, SQLalchemy
Developer Tools: VS Code, Visual Studio, Git, Arduino, Linux
Applications: Unity Game Engine, ShaderToy, MATLab, Fusion360

Education

Toronto Metropolitan *(formerly Ryerson)* University Toronto, ON
Computer Science 4th year student (B. Sc) Co-op *Expected May 2024*
- **3.93/4.33** CGPA
- Relevant Courses: Data Structures and Algorithms, Intro to C and Linux/Unix, Computer Graphics and VR, Machine Learning and AI, Computer Vision