Nabil Mansour

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Work Experience

Software Developer - AI trainer (contract) | *Data Annotation* *May 2024 – present*

- Trained **AI models** on programming-related tasks across multiple languages including **Python**, **C++**, **Java**, **GLSL**, and others.
- Evaluated and iterated on model outputs, using quantitative metrics to measure performance improvements.
- Conducted thorough code reviews and provided detailed feedback to improve model performance and accuracy.

Software and Data Engineer | *Fairly AI* *May 2022 – Sep 2022* | *Jan 2023 – May 2023*

- Developed a **pip-installable** Python library for enhanced code maintenance and future project extensions.
- Implemented big data verification functions that evaluate the potential risk of datasets and AI models.
- Designed a secure role-based access control system (**RBAC**) utilizing **Oso** and Redesigned the database for the back-end: resulting in enhanced data integrity and improved system security.
- Created a dynamic user department front-end system using **React** and **Flask** for efficient organization within companies.
- Participated in a **Scrum** team, contributing to sprint planning, backlog refinement, and daily stand-up meetings.

Research/Teaching Assistant | *Toronto Metropolitan University* *May 2021 – May 2022* | *Sep 2023 - Jan 2024*

- Redesigned and modified CPS 305 (**Data Structures**) labs by improving on the instructions of the first drafts of the labs and providing solutions for them as supervised by **Dr. Marcus Santos**
- 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.
- Administered weekly tutorials, 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** (**SmallTalk**, **Elixir**, **Haskell**).

Products

ExcaliHub | *TS/JS, Next.js, Clerk, Drizzle, better-sqlite3, Mantine UI* ***Web app***

- Built a free platform for creating and sharing **Excalidraw drawings** where users can create, save, and share whiteboard drawings online.
- Utilized **Clerk** and used best practices for ensuring **security**, **authentication** of users, and **authorization** of server actions
- Employed **Drizzle ORM** with **better-sqlite3** to manage database interactions, improving query performance and code maintainability.
- Established a **CI/CD pipeline** with **GitHub actions** and hosted the web app in a self-managed VPS with **DigitalOcean**.

FRACTAL GLIDE | *C#, HLSL, Unity Game Engine, MonoBehaviour, Steamworks* ***Website***

- Conceptualized, designed, and shipped an indie game available on **Steam** made with my custom-made ray/cone marching rendering engine **Fractix**.
- Sold over **100+ units** to players all around the world.
- Documented the process of development in my **YouTube channel**.

Side Projects

Medium 2 Markdown | *TS/JS, Next.js, Mantine UI* ***Web app***

- A web app that allows users to convert Medium articles into Markdown format by providing the link.
- Made in order to convert some of my Medium articles to Markdown so that I could publish them on **my website**.

ThreeJS Ray Marcher | *TS/JS, GLSL, React, Three.js, CodeMirror, MUI* ***Website***

- Created an interactive web app to visualize **SDFs** by allowing the user to modify the shader code with **CodeMirror**.
- Implemented a cone marcher to assist in the marching process: resulting in a drastic increase in FPS of the whole web app.
- Used **three.js** for the general 3D scene setup and **React** for the interactivity with the scene.

Technical Skills

Languages : TypeScript, JavaScript, Python, C#, SQL (Postgres, MySQL, sqlite), HTML5, CSS, GLSL, HLSL, LISP, Java, C/C++, Haskell, Elixir, Ruby
Frameworks : Node.js, Next.js, React, Clerk, Stripe, Drizzle, Flask, ExpressJS, SQLalchemy, Pytorch, Numpy, Pandas, Dask, OpenGL, DirectX, ModernGL, Three.js, R3F, Material UI, Mantine UI, Socket.io, Selenium, Playwright
Developer Tools : Git, Talend, DigitalOcean, Linux, Jira, Arduino, VS code, VS studio, Vim, Emacs
Others : Unity Game Engine, Blender, Photoshop, Illustrator, ShaderToy, MATLab, VirtualBox, Fusion360

Academic Education

Toronto Metropolitan (formerly Ryerson) University **GPA : 3.92/4.33** | B. Sc in Computer Science *2019 – 2024*