

Nabil Mansour

Toronto, Ontario | [@website](#) | [@mail](#) | [@linkedin](#) | [@github](#) | [@youtube](#)

EXPERIENCE

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.
- Optimized **Streamlit** applications and **Jupyter** notebooks for dynamic compatibility with diverse datasets and AI models, improving user experience.
- 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.
- Restructured Data Validation processes, utilizing **Dask** to manage Big Data efficiently, resulting in improved accuracy and processing speed.

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)**.

PROJECTS

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

[Website](#)

- Conceptualized, designed, and shipped an indie game available on [Steam](#) that is using a custom-made ray/cone marching rendering engine called **Fractix**.
- Sold over **100+ units** to players all around the world.
- Documented the process of development in my [YouTube channel](#).

Neuro Gambit | *Python, Pytorch, Jupyter Notebook*

[GitHub](#)

- Developed Chess Artificial Neural Networks, using **PyTorch**, trained on datasets from **Kaggle** and **FICS** games.
- Designed and trained two distinct ANN models: Neuro-Gambit and Neuro-Gambit-resnet, where the former is a completely new model and the latter a fine-tuned resnet model.
- Utilized methods used to avoid overfitting like **L2 regularization, dropout neurons** and **early stopping**.

Slime Simulator | *Python, GLSL, imgui, ModernGL*

[GitHub](#)

- Implemented a slime mold cellular automata simulation that showcases the emergent behaviour 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.

Self Parallel-Parking Arduino Car | *C++, Arduino*

[GitHub](#)

- Developed the software for an **embedded system** that allowed a robotic **Arduino** car to parallel park on its own given a 35cm by 20cm parking slot that is between two parked objects.
- Utilized an ultrasonic sensor that was able to rotate accordingly by a servo motor.
- Controlled the voltage for the wheels of the robotic car using the **DRV-8835** module.
- Received a grade of **A+** as part of the final exercise for CPS 607: **Autonomous Mobile Robotics** course.

TECHNICAL SKILLS

Languages : C#, Python, C/C++, SQL (Postgres, MySQL), JavaScript, TypeScript, HTML5, CSS, GLSL, HLSL, LISP, Java, Haskell, Elixir, Ruby

Frameworks : Flask, ExpressJS, SQLAlchemy, Pytorch, Numpy, Pandas, Dask, OpenGL, DirectX, ModernGL, Node.js, React, Three.js, R3F, Material UI, Socket.io, Selenium

Developer Tools : Git, Docker, Postman, Arduino, Emacs, Linux, Jira

Others : Unity Game Engine, Blender, Photoshop, Illustrator, ShaderToy, MATLAB, VirtualBox, Fusion360

EDUCATION

Toronto Metropolitan (formerly Ryerson) University

GPA : 3.62 | B. Sc in Computer Science

2019 – 2024