

# Shi Qi

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## Skills

|                        |   |
|------------------------|---|
| <b>Languages</b>       | Python, C++, C#, Java, JavaScript, TypeScript               |
| <b>Deep Learning</b>   | PyTorch, sklearn, HuggingFace                               |
| <b>Web</b>             | HTML, CSS, React, Django, Plotly, Dash, Express, TRPC, Next |
| <b>Embedded System</b> | STM32, Arduino, Raspberry Pi, VHDL                          |
| <b>Database</b>        | SQL, Prisma, JDBC, SQLite                                   |

## Work Experience

### Friendlier

Guelph, ON

AUTOMATION

Sep. 2023 - Dec. 2023

- Fully designed an automated solution that scans and sorts various types of containers, using a Raspberry Pi, a barcode scanner, servo motors and conveyor belts.
- Independently implemented a functional iteration of the design, replacing the original manual sorting process and increased the throughput from **300** unit per hour to **750** unit per hour.
- Developed a concurrent model in **Python** to handle IO, scheduler and data fetching in parallel, applying the producer-consumer pattern to communicate between threads.
- Automate operation logging and data collection, and designed a pipeline to generate reports and visualizations, using **Google Scripts**.

### Data2Discovery

Remote - Bloomington, US

SOFTWARE DEVELOPPER

Feb. 2023 - May. 2023

- Maintained and developed a data visualization dashboard using the **Dash** library.
- Patched design flaws, leveraged proper usage of the **Dash** library, and eliminated linearly increasing request time.
- Researched on the **Transformer model**, and hosted workshops discussing its internal workings and limitations.
- Lead projects among three data science graduate teams, contributed to decision making and organized regular internal communications.

## Projects

### SimpleTeleport 🔗

JAVA, SPIGOT, SQLITE, MAVEN

2023

- Developed a **Spigot plugin** for Minecraft 1.20, managing home, warp and player teleports while retaining the vanilla experience.
- Maintain a **SQLite** database through **JDBC** to handle data storage.
- Added custom teleport animation with sound effects, potion effects, particle effects and animated bossbar.
- Published on SpigotMC, with currently 73 downloads after a month of release.

### PoetryGPT 🔗

PYTHON, PYTORCH

2023

- Built a decoder only **Transformer** model in **PyTorch** that generates Chinese Poems.
- Cleaned a dataset of 10000 poems from rare characters to reduce overfitting, and built a character level tokenizer over its vocabulary.

### Reinforcement Learning in 2D Shooter 🔗

PYTHON, PYGAME, PYTORCH

2022

- Created a 2D top-down arena shooter game in **PyGame** with custom sprites and collision logics.
- Worked as a team to implement **Q learning** with **PyTorch** and trained an AI that shoots moving targets in the game.

### Star Formation Simulation: Astro Award Winner 🔗

McGill Physics Hackathon

PYTHON, PYGAME

2022

- Created a simulation of planetary motion in **PyGame**, demonstrating gravitational pulls between stars and the formation of larger bodies.
- Calculated the trajectories using Euler's method, based on physics simulated using Newton's Laws.
- Winner of the **Astro Award** over **100+ participants** in the McGill Physics Hackathon.

## Education

### University of Waterloo

Waterloo, ON, Canada

COMPUTER ENGINEERING, UNDERGRADUATE

2022 - present

President's Scholarship - \$2000