Benson Yan

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Education

University of Waterloo — Waterloo, ON
Bachelor of Computer Science - 3.7 GPA — *2023 – 2027*

- Courses: Imperative Programming, Object-Oriented Programming, Statistics, Combinatorics, Linear Algebra

Experience

Advanced Building Innovation Company — Jan 2025 – Apr 2025
Software Engineering Intern — *Toronto, ON*

- Incoming C#/.NET Software Engineer

Cornerstone Realty Marketing — May 2024 – Aug 2024
Summer Analyst Intern — *Toronto, ON*

- Streamlined an existing data analyzing workflow by creating a dashboard that analyzes key performance indicators across **147** Toronto Neighbourhoods with **Python**, **Steamlit**, **Plotly**, and **Matplotlib**, saving business analysts **multiple days** per project and eliminating all data entry errors
- Increased rental income potential by **10%** by designing demographic models, which optimized unit layouts and amenity choices, providing consultants further insights to perform competitive analyses of the rental market
- Delivered data-driven insights on condominium markets with **5+** comprehensive case studies, guiding investment decisions that maximized rental revenues and tenant satisfaction

Waterloo Aerial Robotics Group — Sept 2024 – Present
Autonomy Software Developer — *Waterloo, ON*

- Enhanced drone landing pad detection to over **85%** accuracy by optimizing **Ultralytics YOLOv8** with inference slicing, improving small object detection and enabling reliable autonomous landings across diverse flying conditions
- Achieved landing accuracy within **0.5 meters** of targeted coordinates, enabling landing pad detection with waypoint navigation and adjustments on drone commands based on real-time **GPS** and **LiDAR** sensor data

Projects

BetUFC | *Python, Docker, Google Cloud, scikit-learn, NumPy, TypeScript, Next.js, Flask* — Oct 2024 – Present

- Developed a predictive model using **Random Forest**, **Bayes**, **KNN**, and **SVM** to achieve over **89%** accuracy in predicting fight outcomes based on historical data from more than **7,000** UFC fights
- Improved model accuracy by **15%** by implementing data preprocessing techniques with **pandas** and **NumPy**, including handling missing values and feature scaling, and optimizing hyperparameters using **Grid Search Cross-Validation**
- Deployed the predictive model as a **microservice** using **Docker**, **Google Cloud Run**, and **Flask**, enabling real-time predictions with **REST API**
- Hosted the full-stack platform using **Next.js**, **Tailwind CSS**, and **Vercel**, providing an intuitive platform for real-time access to the predictive model and historic predictions

Hacknet | *C++, XWindow, Object Oriented Programming* — Nov 2024

- Developed a two-player strategy game featuring a 8x8 board with the objective of capturing the enemy soldiers through battles, viruses, and abilities
- Optimized real-time rendering based on game updates by **70x** by leveraging observers on individual cells to prevent redundant re-renderings on the entire board
- Implemented modular designs across **15+** classes, enabling player abilities, player state tracking, and board interactions

UPenn Chess Club Website | *TypeScript, Next.js, PostGreSQL, NextAuth, Drizzle ORM* — Nov 2024 – present

- Revamped the University of Pennsylvania Chess Club Website, serving **100+** MAU by improving upload speed and accessibility by **10x** with an admin upload system using **NextAuth**, **PostGreSQL**, and **Drizzle ORM**
- Created a **RESTful API** with **CRUD operations**, using indexing and query optimization for efficient data retrieval and manipulation with **Next.js server actions**, enabling real-time updates for posting, archives, and upcoming events

Technical Skills

Languages: JavaScript, TypeScript, Python, C#, C++, C, Java, HTML, CSS, Bash, SQL
Frameworks & Tools: React, Flask, Fast API, Express.js, Node.js, Tailwind, MongoDB, Git, Linux, Docker, Google Cloud
Libraries: NumPy, pandas, Plotly, Matplotlib, TensorFlow, OpenCV, Ultralytics, Drizzle ORM