

Yifan (Tony) Ju

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EDUCATION

University of Toronto Scarborough (UTSC)

September 2023 - July 2027

Honours Bachelor of Science in Computer Science Specialist (Comprehensive Stream)

- GPA: 3.81/4.0
- Relevant Coursework: Data Structures & Algorithms, Systems Programming (Linux), Numerical Algorithms, Programming Languages, Computer Organization, Probability, Machine Learning, Software Engineering, Computation Theory
- Award & Honors: Dean's List Fall 2024, Fall 2025

RESEARCH INTERESTS

- **Robotics**
- **Systems programming**
- **Intelligent systems**
- **Software engineering and human-computer interaction**

TECHNICAL PROJECTS

Toronto Bike Demand Prediction

12 -15 Hrs/Wk; March - April 2026

Group Project; Course Mentor: Professor Yiqing (Irene) Huang

- Led a team-based project on predicting station-level hourly bike demand using Toronto Bike Share data (2021-2024), including proposing the research idea, sourcing the dataset, and drafting the research proposal
- Set up the project structure and development workflow, coordinated task allocation among team members, ensured consistent progress across modeling and report components
- Implemented data preprocessing and feature engineering pipeline in Python, transformed raw trip-level data into a structured dataset with temporal, station-level, and lag-based features
- Built a Linear Regression baseline model and conducted initial evaluation (MAE, MSE, RMSE) to establish a benchmark for model comparison
- Contributed to report writing and final validation, including the Data section, parts of the Introduction and Future Work, performed consistency checks between experimental results and written analysis
- I earned A in this course
- Technologies used included Python, Pandas, NumPy, scikit-learn, Matplotlib, Git

File Management System (Full Stack)

20 Hrs/Wk; May 12 - July 4, 2025

Independent Developer

- Developed a full-stack file management system in C++ using the OATPP framework and RESTful HTTP APIs, developed and managed the application remotely over SSH on Linux systems to ensure compatibility with the Linux OS, built a responsive frontend using Vue.js for intuitive file browsing and management, maintained a clear separation between front-end and back-end components for modularity and scalability
- Technologies used included C++, OATPP, Vue.js, REST API, HTTP

MyMonitoringTool – Linux System Monitoring Tool

25 Hrs/Wk; March 28 - April 7, 2025

Independent Developer; Course Mentor: Professor Marcelo Ponce

- A Linux system monitoring tool written in C that displays real-time memory usage, CPU usage, CPU core count, and maximum frequency. It reads system data from /proc and /sys filesystems, uses pipes and forked child processes for concurrent data collection. Features signal handling for Ctrl-C/Ctrl-Z, customizable command-line arguments for sample count, interval, and monitoring components. I earned full mark in this project
- Technologies used included C, Linux, fork, pipe, Signal Handling, Systems Programming

Jumper Game

16 Hrs/Wk; March 10 - April 7, 2025

Independent Developer; Course Mentor: Professor Nandita Vijaykumar

- Developed a full-featured 2D platform game in MIPS assembly, incorporating rendering, player input, collision detection, and scoring systems, implemented sprite rendering and physics-based movement for smooth gameplay on

low-level architecture, optimized assembly code for performance and memory efficiency, designed the game loop and user interface elements to deliver an engaging player experience, earned full mark in this project

- Technologies used included Assembly, MIPS architecture

Carbon Footprint Calculation App

18 Hrs/Wk; November 1 - December 3, 2024

Group Project; Course Mentor: Professor Rawad Abou Assi

- Designed and implemented an Android application to estimate users' carbon footprint based on daily activities using an Agile, iterative development approach, built core UI flows and application logic in Java following Material Design guidelines, with clear separation of concerns and modular design aligned with SOLID principles, integrated Firebase Authentication for secure user login and Firebase Realtime Database for reliable data storage and real-time synchronization, implemented carbon footprint calculation logic based on transportation and energy consumption inputs, earned A- in this course
- Technologies used included Java, Android, Firebase, Material Design, Mobile Development

LEADERSHIP & COMMUNITY SERVICE

UTSC String Orchestra

2023 - Present

Violinist

- Performed as a violinist in the campus string orchestra, participated in sectional rehearsals twice per semester, crafted technical documentations for string techniques, contributed to the preparation of orchestral repertoire by independently studying string techniques and assisting peers during sectional rehearsals
- Engaged in community outreach performances at local senior care facilities, brought classical music to elderly audiences and fostered intergenerational connection, participated in end-of-term public concerts

UTSC MTA F1 Race Outcome Prediction

October 23 - October 25, 2024

Coordinator; Group Leader

- Assigned tasks for other 3 group members, participated in the MTA Data Analysis Competition to predict Formula 1 race outcomes using historical data, cleaned and analyzed race datasets with pandas and NumPy, handled missing values and performance statistics, performed feature engineering and built predictive models with NumPy for race outcome estimation, presented analysis and prediction results through Matplotlib

SKILLS

- **Programming:** Python, C, C++, Java, Haskell, JavaScript, Shell Script, MIPS Assembly, Racket, Prolog
- **Frameworks & Platforms:** PyTorch, OATPP, Vue.js, Vite, Android SDK
- **Data & Visualization Libraries:** Pandas, NumPy, Matplotlib, Plotly
- **Databases:** MySQL, MySQL Workbench
- **Systems & Tools:** Linux, Git, GitHub, CMake, Makefile, VS Code, Remote SSH, JIRA, Markdown, LaTeX
- **Machine Learning:** Machine Learning, Deep Learning, Transformers, Model Training & Evaluation, Data Analysis