

Peter Vu

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EDUCATION

Computer Science, B.C.Sc., Honours, Mathematics & Film Studies Minor

University of Manitoba

EG: Dec. 2027

Winnipeg, MB

- **GPA:** 4.29/4.5
- **Coursework:** Analysis of Algorithms and Data Structures, Object Orientation, Mathematics of Data Science
- **Awards:** Undergraduate Research Awards (\$7000), President's Scholarship (\$1000)

TECHNICAL SKILLS

Languages: Python, JavaScript, TypeScript, HTML, CSS, SQL, Java, C, C++, R, Bash, GDScript

Frameworks/Libraries: Next.js, React, Astro, Tailwind, Express, PostgreSQL, Prisma, NumPy, OpenCV, TensorFlow

Developer Tools/Other: Docker, Postman, Fly.io, Git, Linux, CMake, Markdown, LaTeX, Neovim, RStudio

WORK EXPERIENCE

Freelance Web Developer

Hanoi - Amsterdam High School for the Gifted

Dec. 2024 - Present

Hanoi, Vietnam (Remote)

- Migrated 10+ Next.js components, layouts and pages into Astro for static site generation and comfortable DX
- Utilized Conventional Commits, Git branching and rebasing for a self-documenting and easily revertible changelog
- Leveraged AI agents such as v0 and Cursor for coding and system design assistance, enabling efficient development

Teaching Assistant and Grader

Department of Computer Science, University of Manitoba

Sep. 2024 - Present

Winnipeg, MB

- Instructed 30+ students on systematic program design with live coding demonstrations and empathetic mentorship
- Evaluated 130+ Python programs of varying styles, providing detailed feedback and debugging breaking code
- Achieved 86% above-average ratings for teaching effectiveness and attained 320% grading efficiency for tests

Undergraduate Research Assistant

Human-Computer Interaction Lab [↗](#)

Sep. 2024 - Present

Winnipeg, MB

- Architected a chapter on advanced linked lists with practical explanations and 10+ examples of varying difficulty
- Evaluated and revised 30+ exercises in a beginner Java workbook, improving their clarity and effectiveness
- Specified various content suggestions, ensuring accessibility for different programming backgrounds such as Python

Undergraduate Research Assistant

Geometric, Approximation & Distributed Algorithms Lab [↗](#)

May 2024 - Aug. 2024

Winnipeg, MB

- Conceived 10 new results with 20+ pages of mathematical proofs for new territory in the pursuit-evasion field
- Synthesized a significant proof built on 10+ lemmas for the lower bound of the underexplored series-parallel graph
- Collaborated with lab members in weekly meetings to iterate on several famous computational geometry problems

PROJECTS

To Do List [↗](#) | *Express, Node.js, JavaScript, PostgreSQL, Prisma, Docker*

Dec. 2024

- Developed RESTful API endpoints for CRUD operations on todo items using Express.js and PostgreSQL/Prisma
- Implemented secure user authentication with bcrypt password hashing and JWT token-based authorization
- Containerized application with Docker and deployed to Fly.io with automated HTTPS and PostgreSQL support

Image Compression [↗](#) | *Flask, NumPy, Pillow, Python, JavaScript*








Oct. 2024

- Built Flask REST API handling image uploads and compression with proper error handling and type hints
- Implemented Singular Value Decomposition algorithm from scratch using NumPy for efficient image compression
- Developed responsive frontend with drag-and-drop uploads, quality slider, and side-by-side image comparison




EITC Navigator [↗](#) | *JavaScript, HTML, CSS, JSON*

Feb. 2024

- Led cross-functional team of 5 developers using agile methodologies and distributed version control systems
- Implemented Dijkstra's pathfinding algorithm with multi-floor navigation support and real-time path visualization
- Engineered automated JSON data generation pipeline by processing architectural floor plans using image analysis

Witch's Forest  <i>Godot, GDScript</i>	Jan. 2024
<ul style="list-style-type: none"> Developed a Mega Man-inspired platformer, implementing character state management and combat mechanics Engineered responsive player controls and animation systems using GDScript for fluid gameplay experience Collaborated with a peer to deliver a compact game demo, receiving applause from 50+ developers in a conference 	
Poketools  <i>JavaScript, HTML, CSS, JSON</i>	Oct. 2021
<ul style="list-style-type: none"> Engineered interactive location-based data visualization using DOM manipulation and event-driven JavaScript Developed persistent team management system with CRUD operations and local storage state management Implemented user authentication with Pokemon-based CAPTCHA and persistent login state using local storage 	
Breast Cancer Classifier  <i>RMarkdown, neuralnet</i>	Nov. 2024
<ul style="list-style-type: none"> Engineered neural network classifier achieving 96.83% accuracy in breast cancer diagnosis using R's neuralnet Documented step-by-step neural network development, demonstrating impact of architecture on model accuracy 	
Bike Station Analysis  <i>RMarkdown, igraph, ggplot2, dplyr</i>	Nov. 2024
<ul style="list-style-type: none"> Analyzed 21,000+ bike-sharing trips using R, revealing seasonal patterns and key transit hub usage Implemented network analysis algorithms to model station connectivity and calculate graph metrics using igraph Created data visualizations with ggplot2 to identify trends in station popularity and network density 	
Matrix Trade Cataloguer  <i>Python, NumPy</i>	Nov. 2024
<ul style="list-style-type: none"> Developed algorithms to catalog Complex Hadamard Matrix trades, advancing research in quantum computing Implemented parallel processing using Python's multiprocessing pool to efficiently generate matrix transformations Created comprehensive logging system to track matrix transformations across multiple output formats 	
MNIST Digit Recognizer  <i>Python, TensorFlow, Matplotlib, Jupyter Notebook</i>	Sep. 2024
<ul style="list-style-type: none"> Developed a MNIST handwritten digit classifier using TensorFlow and Keras, achieving 98% accuracy 	
Deep Learning Battlesnake  <i>JavaScript, TensorFlow, Node.js, Git</i>	Nov. 2023
<ul style="list-style-type: none"> Developed a reinforcement learning-based agent for the Battlesnake game using Deep Q-Networks with TensorFlow Designed experience replay buffer system to store and randomly sample game states for efficient training Built automated model training pipeline that updates neural network weights after each game completion 	

EXTRACURRICULAR ACTIVITIES

Founder <i>Robo-Bisons</i>	Sep. 2024 - Present Winnipeg, MB
<ul style="list-style-type: none"> Launched an initiative to promote and sponsor University of Manitoba students to conferences and competitions Led team of 3 to 6th place nationwide in the IEEEExtreme 18.0 Programming Contest, highest in the university Facilitated the Open Project Showcase, empowering 19 students to develop and present about 8 full-stack projects 	
Director of Student Affairs <i>University of Manitoba Computer Science Students' Association</i> 	Apr. 2024 - Present Winnipeg, MB
<ul style="list-style-type: none"> Published the 12-page First Year Guide for aspiring students, earning 1,500+ visitors to the club's website Organized a student-led town hall, fostering open dialogue between students and the CS Department Coordinated executive teams in moderating 2,000+ individuals in the Computer Science Student Discord 	
Secretary-General <i>University of Manitoba Model United Nations</i> 	Dec. 2023 - Present Winnipeg, MB
<ul style="list-style-type: none"> Revitalized a club with membership of 50+ individuals and 400+ Instagram followers from scratch Directed 10+ sessions on contemporary global issues for beginners to learn researching, debating and presenting Organized an Attack on Titan simulation with 20+ delegates, introducing anime lovers to Model United Nations 	
Vice President & Head of Logistics <i>Hanoi-Amsterdam Japanese Vietnamese Culture Club</i> 	Nov. 2021 - Aug. 2022 Hanoi, Vietnam
<ul style="list-style-type: none"> Led the Japanese culture festival Ichigo Ichie with 4,000+ attendees, donating >\$4,300 to a Peace Village Supervised 80+ members inside and outside the Logistics department for three large-scale events across the year Coordinated with fellow executives to plan a year-long timeline with 50+ promotional posts 	