Thomson Tong

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SKILLS

Programming: Python, C++, Java, C#, Unity, HTML, CSS, React, JavaScript
Machine Learning and Data Science: Pytorch (basics), Numpy, Pandas, SQL, MATLAB, Model evaluation
System Implementation: Git, Github, development and iteration, technical design
Coordination: Leadership, Communication, technical documentation, interdisciplinary reporting

EDUCATION

University of Waterloo - Biomedical Engineering   Waterloo, Ontario
Candidate: BASc | Second-Year Student | 3.84/4.00 Overall GPA   *September 2024 - Present*
- Relevant Coursework: Digital Computation, Data Structures & Algorithms, Linear Algebra, Calculus, Communications, Physics

EXTRA CURRICULARS

Body Language and Emotion Detection Engineer for AI Models
WAT.ai - Waterloo, Ontario   *June 2025 - Present*
- Conducted in-depth reviews of 5+ state-of-the-art research papers in the fields of pose estimation, gesture recognition and emotion detection, focusing on architecture, data preprocessing pipelines, training methodologies, and evaluation metrics.
- Presented detailed internal reports comparing model architectures (e.g., OpenPose, MediaPipe, DETR, VLLMs) and highlighting their trade-offs in terms of accuracy, real-time performance, and computational efficiency.
- Summarized complex technical concepts into clear, accessible overviews for interdisciplinary team members, directly influencing model selection for emotion detection during weekly strategy meetings.
- Identified and mapped trends in deep learning techniques (e.g., CNNs vs. Transformers) for multimodal body language interpretation and emotion recognition.

EXPERIENCE

Apprentice Mechanic
M-Zone Auto - Markham, Ontario   *June 2025 - August 2025*
- Gained hands-on experience in diagnosing and repairing complex vehicle systems, including mechanical, electrical, and software-integrated components.
- Repaired over 120 vehicles in 2 months, applying diagnostic tools (XENTRY Diagnosis) and systematic troubleshooting to efficiently resolve common and complex issues.
- Collaborated with senior mechanics to streamline workflows, increasing shop efficiency by 33% through improved task delegation and coordinated parts replacement.
- Maintained a resilient and solution-oriented approach when faced with difficult challenges or setbacks, reflecting a strong work ethic and commitment to continuous improvement, even in high pressure, fast-paced settings.

PROJECTS

Natural Selection Simulator | *Personal Project Made in Unity*   May 2025 - August 2025
- Designed and built a scalable simulation in Unity that models natural selection, enabling autonomous agents to evolve adaptive traits (e.g., agility, vision) in a resource-constrained environment.
- Supported 2,500+ agents simultaneously, optimizing performance through efficient object pooling and modular AI architecture.
- Conducted hypothesis-driven experiments, leveraging automated logging and data visualization to analyze evolutionary outcomes across multiple generations.
- Strengthened proficiency in simulation systems, agent-based modeling, and data-informed development, while maintaining clean, extensible code for future expansion.

Gun Smash Bros | *Multiplayer Online Game Made in Java*   December 2023 - February 2024
- Built a real-time, online multiplayer game achieving network latency under 15ms through predictive movement, interpolation, and lag compensation.
- Applied principles of real-time scheduling, concurrency, and distributed computation to maintain smooth synchronization between clients.
- Led team-wide Git version control workflows, improving debugging efficiency by 25%.