

Cheng-Hao (Howard), Kao



About me

A second-year MASc student in Mechatronics engineering at the University of Waterloo. Proficient in machine learning and data analysis. Possess the analytical abilities required for research and design as well as a comprehensive grasp of engineering principles. Currently researching on multi-agent system workloads as an intern at Huawei, and working in the Structural Biomechanics Lab on injury prediction. Previously involved in the Robotics and Computer Vision Lab conducting research on multi-robot collaboration joint trajectory planning and control systems and in the Microelectromechanical Systems Lab dedicated to integration of FPCB mirror-based scanners. Seeking more professional training for further development within the field of AI, data analysis, and cognitive science.

Contact

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- Cheng-Hao Kao
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Languages

Chinese - Native Language

English - Professional Knowledge

EDUCATION

January
2024 -
Present

MASc in Mechanical and Mechatronics Engineering
University of Waterloo
GPA: 3.90/4.0 Cumulative

Waterloo, On, Canada

Relevant Coursework: Introduction to Machine Learning, Pattern Recognition and Machine Learning, Deployment of Deep Learning Model, Computational Intelligence, Optimization Methods, Human Factors in Testing

August 2018
- June 2023

Bachelor of Engineering
Toronto Metropolitan University
GPA: 3.85/4.33 Cumulative

Toronto, On, Canada

Relevant Coursework: Mechanical Design, Control of Robotic Manipulators, Real-Time Computer Control Systems, Fundamentals of Robotics, Mechatronics Systems Design, Measurements, Sensors and Instruments, Microprocessor Systems, Control Systems Digital Systems, Computer Programming Fundamentals, Electric Machines and Actuators, Electric Circuits, Applied Finite Elements, Vibrations, Machine Design, Mechanics of Machines, Solid Mechanics, Statics and Mechanics of Materials, Dynamics, Manufacturing Fundamentals, Introduction to Engineering Design, Engineering Graphical Communication, Numerical Analysis, Linear Algebra, Differential Equations and Vector Calculus, Calculus II, Calculus I

August 2015
- June 2018

High School Diploma
No.2 High School of East China Normal University
Average: 95.3/100

Shanghai, China

WORK EXPERIENCE

August 2025
- Present

Technology Planning and Cooperation Intern
Waterloo, On, Canada
Huawei Canada

- Multi-agent system workload trend identification
- Multi-agent system system-level optimization analysis.

May 2024 -
April 2024

Teaching Assistant
University of Waterloo

Waterloo, On, Canada

- Teaching Circuits
- Teaching Mechanics of Deformable Solids
- Teaching Statics

June 2023 -
January
2024

Research Assistant
Toronto Metropolitan University RCVL Lab

Toronto, On, Canada

- Research on multi-robot collaboration joint trajectory planning and control
- Research on micro-plastic detection via ultrasonic sensor and machine learning

Professional Skills

- Deep Learning Machine Learning
- Data Analysis Optimization
- Signal Processing Robotics Control Systems
- Microcontrollers Simulation and Design
- Engineering Mathematics

Honors and Awards

- Dean's List 2018 to 2019 Dean's List 2019 to 2020
- Dean's List 2020 to 2021 Dean's List 2021 to 2022
- Mechanical Engineering Alumni Award
- Mechanical Engineering Capstone Project Award
- Graduation with Distinction

Soft Skills and Strengths

- Adaptability Problem Solving Collaboration
- Team Working Open-Mindedness
- Critical Thinking Communication
- Willingness to Learn Responsibility Reliability
- Enthusiasm Autonomy Motivated
- Stress Tolerance Research and Analysing
- Personal Time Management Strategic Planning
- Patience Empathy Discipline

Interests

- Deep Learning • Robotics
- Machine Learning • Billiards
- Cognitive Science • Board Games
- Agentic AI • Card Games
- Control Systems • Squash
- Basketball

September 2022 - February 2023

Research Assistant

Toronto Metropolitan University MEMS Lab

📍 Toronto, On, Canada

- Research on FPCB mirror-based lidar scanners
- Integration of PSD sensors, ToF sensors, and GUI

April 2021 - September 2021

Research Assistant Intern

Toronto Metropolitan University Ultrashort Laser Nanomanufacturing Lab

📍 Toronto, On, Canada

- Conducting porosity and fiber analyses via SEM image processing
- Generating molecular dynamics simulations

April 2020 - September 2020

Research Assistant Intern

Toronto Metropolitan University Ultrashort Laser Nanomanufacturing Lab

📍 Toronto, On, Canada

- Conducting porosity and fiber analyses via SEM image processing
- Generating molecular dynamics simulations

 **PUBLICATIONS**
Manuscript

2025

Predicting the Risk of ACL Injuries Using Machine Learning Models and Anatomical Predictors, Under Review, Link Unavailable

Arxiv Preprint

2024

Morphological Detection and Classification of Microplastics and Nanoplastics Emerged from Consumer Products by Deep Learning, IEEE, Link

Journal Article

2023

MR. CAP: Multi-Robot Joint Control and Planning for Object Transport, IEEE Control System Letters, Link

 **SOFTWARE SKILLS**
Data Analysis

PyTorch

TensorFlow

AutoGluon

SkLearn

XGBoost

CATBoost

SAM

YOLO

NLopt

Optuna

Robotics

GTSAM

Modeling and Simulation

Simulink

Multisim

ANSYS

Design and Development

SolidWorks

Matlab

LabVIEW

Version Control

GitHub

Office Automation

MS Office (Excel, Word, PowerPoint)

Adobe Illustrator

Overleaf

</> PROGRAMMING LANGUAGES

- Python
- Matlab
- Processing
- C++

- C

- LaTex

- Fortran