Yunze (Lulu) Wei

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EDUCATION

Bachelor of Applied Science & Engineering, University of Toronto (U of T) 2020 – 2025 (Expected)
Major in Engineering Science – Machine Intelligence + PEY Co-op
Minor in Engineering Business

- CGPA 3.69/4.00

RELEVANT COURSES

CSC420 Introduction to Image Understanding
ROB311 Artificial Intelligence
ECE368 Probabilistic Reasoning
ECE353 Systems Software
ECE286 Probability and Statistics
ECE324 Machine Intelligence, Software & Neural Networks
ECE421 Introduction to Machine Learning
ECE355 Signal Analysis & Communication

AWARDS

Best AI Hack, GenAI Genesis 2024 Mar 2024
Dean's Honour List 2020 Fall, 2021 Fall – 2023 Winter
Transdisciplinary Engineering Education & Practice Best Podium, UnERD Aug 2022

RESEARCH EXPERIENCE

Undergraduate Research Student, Toronto Intelligent Systems Lab Jan 2024 – current
Supervised by Prof. Igor Gilitschenski and Maria Attarian

- Researched cross-embodiment robot end-effector grasp predictions from 3D point cloud and morphology representations to generate diverse grasps for unseen end-effectors
- Utilized Graph Neural Networks (GNN) in Pytorch to encode morphology information obtained from robot URDF and meshes, which is then used to predict grasp contact keypoints through conditional autoregression

Learning Effectiveness Research Assistant, U of T ISTEP May - Aug 2022
Supervised by Dr. Qin Liu and Prof. Greg Evans

- Conducted quantitative descriptive and inferential data analysis from survey data of ~250 students in Excel and SPSS to identify contextual factors that contribute to learning effectiveness and efficiency
- Facilitated student focus group interviews and analyzed transcripts using thematic analysis
- Utilized statistical concepts such as tests of significance and factor analysis to articulate findings

PUBLICATION

Q. Liu, G. Evans, **Y. Wei**, M. Moghaddas, K. Mistry, and T. Kecman, "Engineering Students' Perceptions of Learning Effectiveness: Implications from the Lived Experiences Amidst a Mixture of In-Person and Online Instruction," in *Proceedings of the American Society for Engineering Annual Conference & Exposition,* Baltimore, MD, 2023. Available: https://peer.asee.org/43349

PRESENTATION

"What Contextual Factors Influenced Learning Effectiveness and Efficiency? Perceptions of Engineering Students During the Pandemic," Undergraduate Engineering Research Day (UnERD) 2022, Aug. 2022.

ENGINEERING PROJECTS

Perch, GenAI Genesis 2024 Hackathon Mar 2024

- Built a website that generates customized notes in audio, text, and flashcard formats from a lecture transcript or audio recording, addressing SDGs 4 (Quality Education) and 10 (Reduced Inequalities)
- Leveraged Google Gemini API to implement features for transcript cleanup, notes summarization, translation, and flashcard generation
- Won Best AI Hack award

AI-Generated Art Detection Project Lead, TMI, U of T Oct 2023 – Apr 2024

- Trained an image classification model in Pytorch that detects AI-generated vs. human drawn art
- Led a team of seven AI beginners and created plan for data processing, model building, and frontend development
- Implemented pipeline to generate image captions using BLIP2 model and generate images with Stable Diffusion
- Created a website for users to try the model using Streamlit

MaskAway, ECE324, U of T Jan – Apr 2023

- Developed transformer-based model using Pytorch that inpaints facial regions for photos of people wearing masks in a team of three
- Built data processing pipeline by detecting face region and creating image masks for training data
- Finetuned model on curated datasets of two celebrities to improve likeliness to any single individual

Observational Fairness Mini-Project, ECE324, U of T Jan – Apr 2023

- Implemented a modified GAN architecture to predict recidivism using the COMPAS dataset
- Used a SVM when creating training batches to prevent mode collapse

PLATO: Plastic Locator and Tracker Object, **Praxis III, U of T** Jan - Apr 2022

- Designed and developed a final functional high-fidelity GPS tracker prototype in a team of six
- Demonstrated interdisciplinary teamwork skills by collaborating with a business team on a global engineering design project based in Ghana
- Responsible for product planning and pitching: researched stakeholder needs and created pitch brochure
- Built and programmed circuits with sensors and motor using Raspberry Pi and MicroPython

WORK EXPERIENCE

Digital Analytics Co-op Student, Manulife May 2023 – May 2024

- Enabled self-serve reporting capabilities to key stakeholders by innovating analytics dashboards and customizing data visualizations using DOMO and Adobe Analytics
- Created new customized dashboards for site launches to enable analytics on campaigns and KPIs
- Analyzed and interpreted data to provide insights against KPIs for stakeholders
- Created navigation menus of 80+ dashboards using HTML/JavaScript/CSS, improving experience for 300+ users

MEMBERSHIP

Trustworthy Machine Intelligence – Project Lead (U of T) 2023 – 2024
Skule Orchestra – Piano (U of T) 2023
Musicians at Your Door – Piano (U of T) 2022 – 2023

SKILLS

Programming: Python, C, Java, JavaScript, Verilog, Pytorch, JAX, NumPy, Matplotlib, Pandas, MATLAB, Scikit-learn, Git, Linux
Software: Excel, SPSS, DOMO, Adobe Analytics, Decibel
Technical: Computer vision, robotics, transformers, CNN, data processing, data visualization
Professional: Research and synthesis, critical thinking, communication, project management, problem-solving
Languages: English (native), Mandarin (fluent), French (advanced), Japanese (intermediate)