David Guo

Date of birth: 26/05/2003 | **Nationality:** Canadian | **Phone number:** (+1) 6048259637 (Mobile) | **Email address:**

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ABOUT ME

Engineering Science student at the University of Toronto specializing in Machine Intelligence, with hands-on experience in AI, machine learning, and software development. Contributed to advanced projects in AR, and web applications, along with work on Conversational Recommendation and Human-Computer Interaction. Passionate about building data-driven solutions, bringing a solid technical foundation in AI and a commitment to continuous learning and innovation.

WORK EXPERIENCE

THE UNIVERSITY OF TORONTO | DATA-DRIVEN DECISION MAKING LAB – TORONTO, CANADA
Department Department of Industrial and

RESEARCH INTERN – 01/05/2025 – CURRENT

Supervised by Professor Scott Sanner, at the D3M Lab.

Focus**:** Conversational Recommender Systems (CRS) × Human–Computer Interaction (HCI) × Large Language Models (LLMs); bridging dataset design, interaction analysis, and model evaluation to turn dialogue into actionable recommendations.

- Undertook end-to-end design and execution of a controlled user study; built role-specific interfaces, and curated visual catalogs.
- Built a multimodal dataset and labeling pipeline; extending intent taxonomy, LLM integration with human review, and delivered analysis-ready artifacts.
- Developed a reusable framework for analyzing conversational interactions, surfacing common stages and patterns to inform design decisions.
- Integrated and evaluated State of the Art LLMs alongside human workflows, identified strengths, limitations, and practical strategies for improvement.

MODIFACE – TORONTO, CANADA
SOFTWARE DEVELOPER INTERN – 05/2024 – CURRENT

- Developed an innovative AR application for makeup try-on, featuring real-time tracking and simulated makeup application.
- Contributed to engineering library code that effectively handles camera feeds and mask integration, optimizing memory performance for real-time applications.
- Integrated CMS and API solutions, ensuring smooth data connectivity via strong API design practices.
- Strong engineering communication skills, effectively and concisely conveying design philosophies while documenting implementation motivations.
- Implemented Google Analytics to track user interactions and derive insights, informing future improvements and feature development.

EDUCATION AND TRAINING

09/2021 – CURRENT Toronto, Canada
B.A.SC. IN ENGINEERING SCIENCE - (MAJOR IN MACHINE INTELLIGENCE) The University of Toronto

Field of study Electronics and automation , Electricity and energy , Software and applications development and analysis , Database and network design and administration

Final grade CGPA 3.83 | **Thesis** In Progress

PROJECTS

08/2024 – CURRENT
GAN augmentation of WM811K Silicon Wafer Map Dataset for Error Pattern Detection Training

Conducted an investigation into the efficacy of using Wasserstein GANs with Gradient Penalty to generate images to balance the WM-811K silicon wafer map dataset. The ability to generate synthetic data will aid in training image detection models later on to improve fabrication efficiency.

Link https://github.com/davidguo123456/wafer-defect-gan

01/2024 – 05/2024
Music Generation Using Autoencoders and Transformer Mixture Distribution Models

Developed a machine learning model for music generation using autoencoders and transformer mixture distribution models, implemented in TensorFlow. Building on techniques like variational autoencoders (VAEs) and transformers, the proposed approach processes high-dimensional music data to create coherent compositions. By using a sliding window method and training the model on both diverse and classical music datasets, the model aims to capture melodic patterns. While the model performs well at learning tonality, there are still challenges with rhythm and longterm structure. Work is ongoing to explore ways to enhance the model's rhythmic coherence and overall musicality.

Link https://github.com/davidguo123456/ECE324

11/2024 – CURRENT
Multi-task Pancreas Cancer Segmentation and Classification with nnU-Net V2

Implemented multi-task learning to add a classifier head to nnU-Net V2's Residual Encoder. This classifier is used to augment nnU-Net V2's existing segmentation, specifically in the context of lesion subtypes in pancreatic cancers. By utilizing nnU-Net V2's strong baseline encoder-decoder performance, we designed and integrated a feed-forward neural network to classify the subtypes of lesions detected. Diagnostically, these subtypes can have a large impact on prognosis and treatment.

Link https://github.com/davidguo123456/pancreas-cancer-segmentation

SKILLS

Machine Learning

PyTorch, Keras │ Generative Adversarial Networks │ Transformer Learning │ Variational Autoencoders (VAE) │ Deep Neural Networks (CNNs, GANs) │ Deep Learning (Tensorflow, Pytorch(basic), Jax/Flax(basic)) │ Python │ Pytorch,Tensorflow │ Deep learning/Neural networks │ ML Tools(Tensorflow,Keras) │ Neural Networks in Python │ Modeling: Linear and logistic regressions │ Python (Spyder/Jupyter Notebook IDE) │ Python, Scikit-Learn, Numpy, Matplotlib

HONOURS AND AWARDS

04/2022
Ian and Shirley Rowe Innovation Award – The University of Toronto

Value:CA$4,000
The Ian and Shirley Rowe award is presented to the design team with the most innovative design solution during the Praxis design course's final showcase. My team and I received this award for our work on a redesigned beehive project which involved both CFD simulations of heat and airflow and working closely with local Toronto beekeepers to address issues with hives surviving harsh winters. The experience demonstrated the importance of understanding problems from not only an engineering perspective but also a more personal and inclusive perspective to better understand a client's needs.

2021
UofT Scholar – The University of Toronto

Value: CA$7,500
The University of Toronto Scholars Program provides recognition to U of T's outstanding students, at admission.

LANGUAGE SKILLS

Mother tongue(s):   **ENGLISH**