

David Guo

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

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● ABOUT MYSELF

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, real-time data processing, and web applications through roles at ModiFace and other organizations. Passionate about building data-driven solutions, bringing a solid technical foundation in AI and a commitment to continuous learning and innovation.

● WORK EXPERIENCE

05/2023 – 09/2023 Vancouver, Canada

SOFTWARE DEVELOPER DEALERVU

- Independently organized and facilitated the rapid development of a stand-alone web application for inventory and sales management.
- Well-rounded full-stack development experience with React, Azure .NET, and MS SQL Server.
- Implemented efficient and low-impact localization functionality for the Super Order Management web application using React to streamline end user experience.
 - Utilized a combination of custom tools, Moment, KendoReact, and CLDR, along with API and backend infrastructure to store and retrieve translations site-wide, reducing load times.
- Designed and created informative and customizable MVC-based report tools to accurately predict part orders and returns, along with save and edit functionality to aid in client business decision-making
 - Consulted closely with users to formulate solutions unique to individual dealer's requirements

05/2024 – CURRENT Toronto, Canada

SOFTWARE DEVELOPER INTERN MODIFACE

- 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

Artificial Intelligence and Machine Learning: Experienced in training neural networks, machine learning techniques, probabilistic reasoning, and artificial intelligence applications, with a focus on data-driven models and algorithmic processes for intelligent systems.

Software Development and Algorithms: Coursework in computer programming, data structures, systems software, and digital computation, with an emphasis on algorithm design and optimization for efficient software solutions.

Mathematics and Engineering Computation: Studies in calculus, linear algebra, matrix optimization, and differential equations, applied to engineering and computational modeling for AI and ML systems.

Engineering Fundamentals: Background in structural engineering, thermodynamics, mechanics, and materials science, supporting an engineering approach to technical problem-solving.

Website <https://www.engineering.utoronto.ca/> |

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 | **Type of credits** FCE | **Number of credits** 17 | **Thesis** In Progress

PROJECTS

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>

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>

DIGITAL 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

Web Development

CSS | Node.js, React.js | JavaScript | HTML

General Software Development

Git

Full Stack

C C++ C (C-Sharp) | ASP .net | SQL | SQL and MS-SQL

● 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 project called for a detailed and nuanced understanding of a problem that we initially had little experience with, and was deeply impactful. 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.

Dean's Honour List – The University of Toronto

Semesters Received:

Year 1 Semester 1
Year 1 Semester 2
Year 2 Semester 1
Year 2 Semester 2
Year 3 Semester 1
Year 3 Semester 2

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**

Other language(s):

| | UNDERSTANDING | | SPEAKING | | WRITING |
|---------|---------------|---------|-------------------|--------------------|---------|
| | Listening | Reading | Spoken production | Spoken interaction | |
| CHINESE | C2 | A2 | C2 | C2 | A2 |

Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user