Wenqi Marshall Guo

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Education

Sep 2022 - Dec 2024 **University of British Columbia**
Honours B.Sc. in Computer Science
GPA: ***3.75/4.33*** (***80.5%***)

Skills

- **Languages/Frameworks:** Python, PyTorch, TensorFlow, R **Tools:** LaTeX, Blender, Git, Docker **Expertise:** Computer Vision, Deep Learning, Diffusion Models, Zero-Shot Learning **Leadership:** Student Mentorship and Team Lead

Research Experience

- **Dynamic Negative Guidance Scaling for Diffusion Models** May 2025 - Present
(*First Author*) *Developing novel methods for dynamic negative guidance scaling to improve model adherence to complex negative prompts and enhance image generation quality.*

- **Zero-Shot Camouflage Segmentation** Jan 2025 - May 2025
(*First Author*) *Drastically improved SOTA zero-shot performance, boosting the weighted F-measure from 0.3 to over 0.6 and outperforming supervised baselines.*
https://arxiv.org/abs/2505.01431

- **Gas Leak Detection Using Computer Vision in IR Images** Aug 2024 - Apr 2025
(*First Author*) *Accepted to CVPR 2025 Workshop. Proposed a new simulated dataset and a novel zero-shot method for gas leak detection. Mentored other students on the project.*
https://arxiv.org/abs/2503.02910

- **3D Molecular Model Structure Recognition for Chemical Education** July 2023 - Apr 2024
(*First Author*) *Accepted to IEEE JAC-ECC. Developed an ML tool to convert images of molecular models to IUPAC names, enhancing student learning. Mentored an undergraduate student on this project.*
https://chemrxiv.org/engage/chemrxiv/article-details/66ad31975101a2ffa8f37339

- **Waste Water Treatment Plant Emission Analysis** Aug 2024 - Sep 2024
Applied image processing techniques to analyze and quantify methane emissions from wastewater facilities, providing critical data for environmental monitoring.
https://www.mdpi.com/2072-4292/16/23/4422

- **Molecular Similarity Search Using Cascading Metric Tree** Jan 2022 - Jan 2023
(*First Author*) *Implemented a metric search structure and applied it to molecular similarity searching using graph editing distance.*
https://arxiv.org/abs/2405.17434

Experience

- **Research Assistant** Sep 2022 - Sep 2023; Sep 2024 - Present
University of British Columbia
Engaged in diverse research support roles, including developing computer vision methods for gas leak detection and creating web platforms for Human-Computer Interaction (HCI) studies.

- **Software Engineering Project** May 2024 - Aug 2024
  University of British Columbia
  Designed and developed a full-stack faculty management system to streamline administrative processes and data handling for university departments.

Selected Projects

- **Meeting Paw - An AI Meeting Assistant**
  Developed an AI-powered meeting assistant, featuring real-time summarization, interactive screen and conversation engagement, and a virtual whiteboard controlled via hand gestures. Awarded "Best Use of Gemini AI."

- **A Public Transit Ticketing System**
  Implemented a prototype transit ticketing system using QR-Code with an analyzing dashboard for administration; won a top prize for the 2023 Sep MLH Hackathon.

- **Deep Learning-Based Music Composer**
  Developed and trained two transformer-based music composition models: one using a traditional decoder-style transformer, and the other a GPT-based model.

- **Machine-Learning-Based Privacy Policy Assistant**
  Trained a language model to highlight parts of privacy policies that users need to pay attention to.