Brian Cong

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Education

Eastern Michigan University *Sept 2021-Dec 2024*

Bachelor of Science in Computer Science

- Awarded *Undergraduate Research Stimulus Program* grant to conduct research on large language model text detection; results presented at *44th Undergraduate Research Symposium* and *2024 ML Conference* @ EMU
- Founder, President of AI Student Association of Eastern Michigan University
- Teaching Assistant for courses: COSC221: Computer Organization I, COSC480: Special Topics — Neural Networks/Deep Learning
- Notable Coursework: COSC 480: Special Topics - Neural Networks/Deep Learning, COSC 667: Machine Learning and Data Mining, COSC: 473 Big Data II, COSC: 411 Algorithm Design and Analysis

Experience

Machine Vision Engineer *Dexter, MI*

Liberty Robotics *June 2024 - Current*

- Guided deep learning initiative on domain adaptation and fine tuning of *Segment Anything* family of vision transformer models to adapt to multimodal 3D sensor data, resolve ambiguous segmentation masks and integrate a mixture of expert models to perform instance segmentation on edge devices with *99.9+%* precision requirements in industrial settings.
- Designed and implemented data pipeline involving novel evaluation techniques for labeless data annotation, latent space evaluation, and zero-shot continuous learning utilizing cloud based platforms such as Amazon AWS, Google Cloud Platform, Label Studio, and Voxel51.
- Lead deep learning project to explore utilization of 3D depth image data in forward noise generation for realistic simulation of laser point cloud data utilizing conditioning networks with diffusion models and U-Net autoencoder architectures with hybridized custom loss functions.

Machine Learning Research Intern *Ann Arbor, MI*

Ann Arbor Algorithms *Dec. 2022 - Dec. 2023*

- Utilized LSTM and time-series transformer data in support of research group to publish study on activity classification utilizing multi-site gyroscopic and accelerometer sensors with SOTA accuracy of 76% AUC.
- Compiled reports and generated data visualization and analyses to communicate findings in biweekly meetings with broader research group at Eli Lilly.

Publications

Assessing the impact of body location on the accuracy of detecting daily activities with accelerometer data. **iScience. 6;27(2):108626.** Jan 2024

Dang X, Li W, Zou J, ***Cong B***, Guan Y.

10.1016/j.isci.2023.108626 PMID: 38318391; PMCID: PMC10838735.

Projects

LLM Text Detection — Python, Tensorflow, NLP, transformers, LLMs *Github Repo*

- Researched and built ensemble classifier using bidirectional transformer embeddings to detect AI generated text with 93% accuracy.
- Received URSP Grant and presented at 44th Undergraduate Research Symposium @ EMU

MLite: Automated ML — Docker, Keras, Sklearn, pip, venv, AWS EC2 *Github Repo*

- Designed and built autoML pipeline which presents a user with best-fit models when analyzing data.

Skills

Languages: Python, C++, C, Java, C#, SQL, JavaScript, Lisp

Technologies: Pytorch, Torchvision, HuggingFace, Google GCP, Amazon AWS, scikit-learn, Keras, openCV, Docker, Detectron, Voxel51, Tensorflow, Jupyter, AWS, Unreal Engine, Neural Networks