Bohan Wang

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Education

McGill University ***(Ranked #29 Globally, #2 Nationally)***, Bachelor of Engineering: Computer Engineering – Montreal, Qc — Aug. 2021 – Present

- **Relevant coursework:** Data Structures and Algorithms, Applied Machine Learning, Software Engineering, Operation System, Model-Based Programming, Natural Language Processing, Computer Vision

Professional Experience

Frontend Developer (React, Tailwind, JavaScript, TypeScript) – Data-Curve (Independent Contractor) — May. 2024 – Aug. 2024 — Remote

- **Developed complex interactive front-end components** that could not be AI-generated, ensuring accurate restoration of expected **functional features**. Utilized **React**, **Tailwind CSS**, and **TypeScript** to create high-fidelity user interactions.
- **Authored critical front-end data cases** to enhance interactive UI functionality, contributing to a **20% expansion** of the company's front-end data collection.
- **Delivered production-ready front-end code** for language model companies, enabling them to refine AI-driven UI generation and improve overall model accuracy.

Software Development Intern (CV) (Python, OpenCV, Matplotlib) – Northking Information — Apr. 2023 – Aug. 2023 — Onsite - Beijing, China

- **Fine-tuned state-of-the-art computer vision models** by leveraging diverse datasets and optimizing **CNN-based architectures** to maximize both accuracy and precision.
- **Proposed and implemented improvements inspired by the latest YOLO model**, introducing an additional filtering loop layer that increased **color-differentiation accuracy by 2.5%** and **precision by 4%**.
- **Enhanced the accuracy of vehicle license plate recognition systems**, refining computer vision pipelines and boosting overall model reliability, leading to increased revenue for the company.

Python Machine Learning Engineer Intern (Numpy, Pandas, MySQL) – TaiHe Technology — Apr. 2022 – Aug. 2022 — Onsite - Xi'an, China

- **Developed pre-processing models for NLP-based event and news analysis**, structuring and labeling data to enhance compatibility with quantitative trading models.
- **Proposed and optimized data processing strategies** in response to new economic policies, leveraging insights from industry conferences to refine data classification and feature weighting.
- **Redefined NLP model parameters** based on various loss functions, improving accuracy across different loss metrics by up to **7%** and increasing model processing speed by **2%**.
- **Enhanced the adaptability of financial event classification models**, refining data tagging and distribution to improve the efficiency of quantitative analysis.

Projects

Menu Lens — *React(JavaScript), OpenCV, OpenAI, Flask (Python)* — Jan. 2025

- **Developed an AI-powered system to transform restaurant menu images into an interactive digital format**, enabling translation, categorization, and personalized recommendations.
- **Implemented real-time menu translation into multiple languages**, leveraging **OCR (Optical Character Recognition) with OpenCV** and **OpenAI's NLP models** for accurate text processing.
- **Integrated smart dietary filtering**, allowing users to categorize dishes, filter allergens, and customize recommendations based on dietary restrictions.
- **Designed an AI chatbot to summarize menu options**, recommend dishes based on user preferences, and improve communication between diners and restaurant staff.

AI Darling *three.js, OpenCV, AI Models, Flask (Python)* Nov. 2024 - Dec. 2024

- **Designed an AI-powered virtual assistant for older adults (55+)** who are unfamiliar with smartphones and AI agents, providing memory support, daily scheduling, weather updates, and companionship.
- **Developed a fully voice-controlled AI assistant** using **JavaScript**, **React**, and **Flask**, ensuring an intuitive and accessible experience with simple instructions and a user-friendly UI.
- **Created a 3D interactive AI cat companion** using **Spline** and **three.js**, making the assistant feel more like a pet and enhancing engagement.
- **Integrated speech-to-text and text-to-speech functionalities** for natural voice interactions, enabling seamless communication and accessibility. And **a memory module and smart event scheduler** with **Flask**, helping users manage reminders, daily routines, and personalized notifications.

CyberSight *React (JavaScript, TypeScript), Flask (Python), MongoDB, CloudAMQP* Jan. 2024 - Dec. 2024

- **Developed a mobile app to assist blind and visually impaired (BVI) individuals with grocery shopping**, utilizing real-time computer vision to help navigate store aisles and locate products.
- **Implemented a smart shopping list feature**, enabling the app to identify and announce listed products using live camera feeds and AI-driven object detection.
- **Integrated speech-to-text, text-to-speech, and vision models** to enhance user interaction and accessibility, providing seamless voice guidance during shopping.
- **Built a cloud-based infrastructure with MongoDB and AMQP message queues**, ensuring smooth real-time processing and data management.
- **Achieved 90% detection accuracy for items within 1 meter** and **70% accuracy for 1m-3m distances** after five rounds of user testing, significantly improving shopping efficiency.

AR Boxing *C#, Python, Unity, OpenCV, Mediapipe* Jan. 2024 - Feb. 2024

- **Developed a Unity-based boxing game with Computer Vision integration**, enabling real-time player interaction using a standard camera for an immersive gaming experience.
- **Implemented real-time hand tracking with Mediapipe and 3D motion detection**, allowing players to engage dynamically without physical controllers.
- **Invented a novel real-time 3D asset loading system for Unity**, allowing seamless 3D model generation and injection into the game during runtime without pausing or restarting.
- **Designed a custom Unity script that dynamically loads Base64-encoded 3D models**, enabling real-time API calls for 3D object creation—a feature not previously available in Unity.
- **Integrated a Python Script to convert 2D images into 3D models**, allowing players to generate and customize in-game assets, enhancing interactivity and user creativity.

Honors and Awards

- **1st Place - Quebec Engineering Competition (Programming)** *Jan 2025*
  Representing McGill in the annual Quebec provincial engineering competition (programming category)
- **1st Place - McGill University Engineering Competition (Programming)** *Oct 2024*
  Annual internal McGill engineering competition (programming category)
- **Waterloo University Euclid Contest Certificate of Distinction** *May 2021*
  Top **25%** worldwide

Publications

Sensitively humidity-driven actuator and sensor derived from natural skin system. 01 November 2022

- Yingte Wang, Rong Duan, Zhaomin Tong, **Bohan Wang**, Zhiyang Zhang, Yawei Li