Bruce Wang

📞 +1 778-321-8326   ✉ b225wang@uwaterloo.ca   in LinkedIn   ⌂ GitHub   ⊕ Personal Website

Technical Skills

Languages: JavaScript, TypeScript, Python, Java, SQL, C, C#, C++, HTML, CSS
Frameworks: React, Redux, Node.js, Express.js, Next.js, React-Native, Flask, Django, FastAPI, Tailwind, Bootstrap
Technologies: Git, Postman, Redis, Docker, AWS, Google Cloud, Azure, Supabase, MongoDB, Linux, TensorFlow, OpenCV

Experience

Software Engineer   Sept 2024 – Current
Hppn.ing   *Waterloo, ON*

- Expanded user base to **200+ MAU** and led the development of **Hppn.ing** ↗, a startup transforming event discovery
- Implemented semantic search for **10000+** events using vector embeddings, **Python**, and **Supabase RPC**, leveraging cosine similarity and Sentence Transformers to deliver context-aware results in under **1 second**
- Built map view with 10K+ markers with dynamic clustering using **Google Maps** and **Redis**, creating **5+ RESTful API** to reduce render times by **80%** and data payload by **95%** through region-based loading and on-demand data retrieval
- Developed **10+** frontend components to production with **TypeScript**, **JavaScript**, **React Native**, and **NativeWind**
- Leveraged **useContext**, **useRef** and **Reducers** for efficient state management and component communication

Software Developer   May 2024 – Sept 2024
TopInfoDev Solutions   *Vancouver, BC*

- Developed a responsive e-commerce platform with **React**, **Next.js**, and **MySQL**, leveraging **GPT-4o** to generate personalized recommendations for **2,000+** products and **Google Vision** to enable image-based product searches
- Implemented **Redis caching** for frequent database queries and designed rate-limiting middleware with **Express.js** to handle API traffic spikes, reducing server load by **40%** during peak usage and improving response times by **35%**
- Integrated **PayPal** and **Stripe** payment methods with **RBAC, JWT, and OAuth2** for security measures, along with dynamic tax calculation, real-time inventory validation, and automated invoice generation

Autonomy Software Engineer   Sept 2024 – Current
Waterloo Aerial Robotics Group   *Waterloo, ON*

- Implemented flight control systems in Python with a **ROS framework**, improving software modularity and scalability
- Improved drone landing pad detection to **85%+ accuracy** by optimizing **YOLOv11** with inference slicing, improving small object detection and enabling reliable autonomous landings within **0.5 m** across various conditions

Projects

WatClub | *Node.js, Django, SQLite, Tensorflow, Numpy*

- Placed **1st** out of **100+ teams** teams in Waterloo's Project Program by developing a club rating app for UW students
- Designed **30+ REST** API endpoints enabling JWT authentication, commenting, voting, saving and filtering by tags
- Created a custom **TF-IDF**-based search engine by indexing club data, reducing query responses within **1 second**
- Periodically webscrapped **5+** websites using **Python**, **Selenium**, and **BeautifulSoup**, ensuring up-to-date club data
- Implemented a content-based **Deep Q-Network RL** recommender system, with TensorFlow for client-side inference

FIRST Tech Challenge | *Java, OpenCV, GoBilda, Road Runner*

- Led a 10-member robotics team to rank **9th internationally** in 1 year and **top 5 nationally** for 3 consecutive years
- Designed autonomous systems with **2 cm** accuracy using encoders, odometry wheels, and GoBILDA Strafer Chassis
- Optimized object detection with **OpenCV** and Logitech webcam, improving task speed by **30%** and accuracy to **90%**

Tune2Keys | *Node.js, Flask, Music21, PyTorch, Numpy*

- Achieved **5th** place out of **60+** teams at HackWestern by developing a tool that converts audio to MIDI files and sheet music using a **convolutional recurrent neural network (CRNN)**, achieving a **96.72%** onset F1 score
- Integrated **Music21** with **Node.js** and **Flask** to enable music customization and difficulty adjustment

Education

University of Waterloo   Waterloo, ON
Bachelor of Computer Science   *2024 – Current*