Bruce Wang

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Technical Skills

Languages: TypeScript, JavaScript, Python, Java, SQL, C, C#, C++, Bash, HTML, CSS
Frameworks: React, Next.js, Express, Node.js, React Native, FastAPI, Flask, Django, PyTorch, Pandas, Tailwind
Technologies: Git, Postman, Redis, Docker, AWS, GCP, Linux, Supabase, PostgreSQL, MongoDB, Kubernetes, Jira

Experience

Software Engineer Intern   May 2025 – Aug 2025
Plato Technologies   *San Francisco, CA*

- Incoming Summer 2025

Software Engineer Intern   Sept 2024 – Apr 2025
Hppn.ing   *Waterloo, ON*

- Expanded user base by **2,000+ MAU** and developed core product features with **React Native**, **TypeScript** and **FastAPI**
- Implemented semantic search for **10,000+** events with **Python** and **PostgreSQL**, converting user queries into vector embeddings with OpenAI API and ranking results with cosine similarity, reducing irrelevant search results by **67%**
- Built map view with dynamic marker clustering using Google Maps and Redis, designing **RESTful** API endpoints to reduce render times by **80%** and data payload by **95%** through region-based loading and on-demand data retrieval
- Deployed on **AWS ECS** and **Vercel** using CI/CD pipelines with GitHub Actions and Docker, ensuring **99.9%** uptime

Full-Stack Engineer Intern   May 2024 – Aug 2024
TopInfoDev Solutions   *Vancouver, BC*

- Developed a responsive e-commerce platform with **React**, **Next.js**, **Tailwind CSS**, and **MySQL**, leveraging GPT-4o to generate 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 **JWT** authentication and **OAuth2**, utilizing **Redux** to maintain persistent cart states across sessions and streamline multi-step checkout workflows

Projects

⬡ **Tune2Keys – Audio to Sheet Music ML Model** | *Python, PyTorch, NumPy, React, Flask, JavaScript*

- Created a multi-task **CRNN** model using PyTorch that transcribes piano audio into MIDI and sheet music, surpassing the **SOTA (94.80%)** with an F1 score of **96.72%** through BiGRU optimization and hyperparameter tuning
- Processed audio into mel-spectrograms for frequency analysis and applied **CNN** layers for pitch and onset detection
- Refined note sustains with **BiGRUs**, converted to MIDI with Music21 and produced sheet music with MuseScore

⬡ **WatClub – Full-Stack Club Review App** | *React, JavaScript, Django, SQLite, Git, Docker, Selenium*

- Won **1st** out of **100+ teams** in Waterloo CSC Hackathon for developing a club review platform for UW students
- Designed **20+** RESTful APIs using **Django** enabling JWT authentication, commenting, liking, and tag-based filtering
- Built a search engine using **TF-IDF** for relevance and n-grams enabling fuzzy search, reducing query time to under **1s**
- Periodically webscrapped **5+** websites using **Python**, **Selenium**, and **BeautifulSoup**, storing structured data in SQLite

⬡ **SoccerMetrics – AI Soccer Analysis** | *Ultralytics, MediaPipe, Docker, Pandas, OpenCV, React, TypeScript, Flask*

- Won **2nd** out of **70+** teams at **GeeseHacks** by developing a soccer analysis platform for kick form and angle feedback
- Utilized Ultralytics YOLOv8 for ball tracking and MediaPipe GHUM 3D for extracting biomechanical pose metrics
- Used **Pandas** to analyze critical contact frames and **OpenCV** to overlay skeletal connections and ball trajectories
- Built a full-stack system with **React**, **Flask**, and **Tailwind CSS**, integrating OpenAI and LangChain to provide feedback

Education

University of Waterloo   Waterloo, ON
Bachelor of Computer Science, Co-op   *2024 – Present*