Ernie Wang

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Education

Northwestern University, Computer Science and Jazz Studies   Evanston, IL
- GPA: 3.61/4.0   Sept 2021 – June 2025
- Relevant Coursework: Data Structures & Algorithms, Computer Architecture, Databases, Security, Information Systems, Machine Learning/AI, Operating Systems, Scalable Software Architecture, Distributed Systems

Technical Skills

Languages: Python, JavaScript, TypeScript, C++, Racket, Java, Go

Frameworks/Tools: Git, Linux, XML, Flask, FastAPI, BeautifulSoup, NumPy, Pydantic, Pandas, Supabase, React, AWS, Node, MySQL, SQLite, NextJS, Tailwind, Electron, Puppeteer

Other: Finale, Logic Pro X, Adobe Photoshop, Final Cut Pro X, Musescore

Work and Projects

Northwestern University - Computer Vision Developer, *Python, p5.js, PoseNet, Flask, Node.js*   Mar 2025 – June 2025
- Designed and implemented a web application that captures poses using PoseNet (p5.js) and a machine generation model (VampNet) to continuously generate music in response to video capture.
- Engineered real-time tempo detection using FFT on joint velocity time-series, leveraging JavaScript math libraries for precision.
- Developed adaptive frontend controls to modulate model inputs in near real time utilizing most recent pose data and music theory heuristics.

Harmonizer, *Python, JavaScript, HTML, CSS, XML, FastAPI, JSON*   Nov 2024 – present
- Developed a web application utilizing FastAPI, enabling musicians to upload melodies in MusicXML/MXL format and download modified XML files with melodies harmonized programmatically to the existing and custom harmonic rules.
- Provided a heuristics modifier supporting thousands of note-chord combinations and common harmonization options
- Stored user-defined presets in browser local storage, with future plans to server side storage
- Conducted extensive test cases to handle edge cases, enabling a cyclical development process as new chords were added and encountered.
- Implemented RESTful APIs to manage XML file exchange and streamline client-server communication.

Resume Tuner, *Python, JSON, HTTP, docx, Next.js, Tailwind CSS*   Mar 2025 – present
- Building a web application and browser extension that leverages the Gemini API to intelligently optimize resume sections and keywords based on job descriptions
- Developed a Next.js backend using the App Router, with event handlers for resume updates, deployments, and LLM API integrations
- Implemented a single-page application for resume editing using the docx library, along with a browser extension for seamless job description input

MuseCatalog, *Node.js, SQL, AWS-RDS, AWS-EC2, Spotify-API, ChatGPT-API*   Mar 2023 – May 2023
- Developed a music recommendation platform integrating OpenAI's GPT API with the Spotify's Web API, enabling dynamic playlist generation from natural language queries.
- Implemented relational data persistence using Amazon RDS (MySQL), storing user accounts, playlists, and historical queries to enhance personalization
- Deployed backend services on Amazon EC2, handling user authentication and API communication
- Designed and documented a RESTful API with endpoints for song discovery, listing favorites, history, catalog reset, and recommendation refinement.

Other Experience

G2i, Engineer for AI Training Data   June 2024 – July 2024
- Evaluated and ranked outputs from Scale AI's LLM, offering detailed feedback on ethical considerations, language clarity, and visual coherence.
- Ensured responses met factual accuracy standards to improve AI model performance and reliability.
- Skills: *AI Training, Evaluation, Data Annotation*

Self-Employed, Musician   Sept 2020 – present
- Performed with Northwestern University Jazz Orchestra (2020–2024) and in a variety of university bands, featuring both live and virtual gigs.
- Utilized AI music generation tools (Musicfy, Udio) alongside custom scripts to explore digital composition and arrangement.
- Conducted private lessons, teaching saxophone/clarinet fundamentals and improvisational listening skills to a broad range of students.
- Skills: *Performance, Jazz Improvisation, AI Music Tools, Teaching*