

MIRANDA CHEN

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SKILLS

Languages: Python, SQL, C++, JavaScript, TypeScript, HTML, CSS

Tools: NumPy, SciPy, Matplotlib, pandas, sci-kit learn, MySQL, Node.js, React, OpenCV

EXPERIENCE

DATABASE PROGRAMMER, OAK RIDGES HEART CLINIC

MAY 2023 – AUGUST 2023

- Developed a program using **Python (NumPy, SciPy, Matplotlib, pandas, Neurokit2)** that diagnoses ECG rhythm abnormalities from a 10-second ECG with an **accuracy of 80%**, providing a valuable diagnostic support tool to healthcare professionals.
- Created an optical character recognition application using **Tesseract-OCR** to convert scanned faxes into searchable PDFs, reducing manual work by **5+ hours** per week and data entry errors by approximately **95%**.
- Developed a **web scraping** application using **Selenium** to automate the retrieval, upload, and classification of patients' medications, documents, and lab results into the clinic database, improving workflow efficiency by **65%**.
- Self-initiated learning of **SQL** and **MySQL** to gain proficiency in database management and querying, demonstrating a proactive attitude towards acquiring new skills.

AI/ML DEVELOPER, WATOLINK NEUROTECH DESIGN TEAM

JAN 2023 – PRESENT

- Currently developing and training a **Convolutional Neural Network (CNN)** for real-time EEG signal classification, enabling control of a **Brain-Computer Interface (BCI)** wheelchair
- Developed a plan for EEG data collection and performed signal processing procedures to create dataset for model training.
- Researched EEG signals evoked by visual stimuli to determine the feasibility of **Steady-State Visual Evoked Potential (SSVEP)** as a paradigm to control a **BCI** wheelchair.

PERSONAL PROJECTS

HECKLER.AI | HACK THE VALLEY 2023 FIRST PLACE

- Leveraged **OpenCV** and Google's **MediaPipe** framework to detect and analyze hand gestures, facial expressions, and posture to help improve users' presentation skills by providing real-time feedback.
- Collected facial landmark data and trained a **logistic regression** model using **scikit-learn** to classify facial expressions.

MASK DETECTION

- Developed **Convolutional Neural Network (CNN)** using **sci-kit learn** to detect if the subject in an image is wearing a face mask.
- Used **NumPy** and **pillow** to preprocess data in preparation for training the CNN model.

T-REX AI GAME

- Designed and developed an interactive user-versus-AI game using **Pygame**, providing users with the opportunity to witness the AI's learning process as it plays the Chrome dinosaur game.
- Employed **NEAT (NeuroEvolution of Augmenting Topologies)** to train the AI and incorporated different difficulty levels by adjusting the population training size.

NUTRICART

- Created a Chrome Extension using **React** and **TypeScript** that tracks calories and macronutrients when buying groceries using Instacart.
- Implemented **Nutrient API** to obtain nutritional values of each item in shopping cart.
- Developed interactive UI that calculates the user's recommended nutritional intake and compares it to the nutritional value of the user's shopping cart while giving instant feedback on the user's cart's nutritional status.

EDUCATION

UNIVERSITY OF WATERLOO

SEPT 2022 – PRESENT

- Bachelor of Applied Sciences (Honours) Candidate, Biomedical Engineering with Co-op**
- Co-op Student of the Year 2023 Nominee
- Relevant Courses: Data structures and algorithms (BME 122), Digital computation (BME 121), Calculus 2 (SYDE 112), Intro to Biomedical Design (BME 161).