Taichen Ling

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Skills

- **Programming Languages**: Java | JavaScript | TypeScript | HTML | CSS | C++ | C | Python
- **Libraries & Frameworks**: React | Redux | Next.js | Express | TailwindCSS
- **Tools & Platforms**: Docker | Kubernetes | Node.js | NATS | MySQL | MongoDB | Redis | Git | GitHub | Vercel | DigitalOcean

Experience

Research Assistant — **CMU Computational Engineering and Robotics Lab** — *Pittsburgh, PA* — **10/2022 - Present**

- Lead the conceptualization and development of an innovative **Javascript** algorithm, adeptly decoding intricate Engineering Drawing SVG files into human readable content. This transformative solution streamlined the interpretation and analysis of complex visual data.
- Superheaded the preprocessing and conversion of a vast dataset comprising over 100,000 Engineering Drawing SVG files into JSON format leveraging **Node.js**. This data transformation laid a robust groundwork for subsequent machine training and predictive modeling.
- Engineered and optimized a **Node.js** algorithm with a focus on comprehensive view separation within complex Engineer Drawing DXF files. Systematically extracted and organized critical points, enabling downstream data processing and enhancing overall workflow.

Selected Projects

RecipeNE: Dynamic and Responsive Microservice Recipe Website — **06/2023**

- A dynamic and full-responsive recipe website adhering to REST API and microservice principles, utilizing the tech stack including **React**, **Next.js**, **Express**, **MongoDB**, **Redis, and TypeScript**.
- Implemented advanced functionalities encompassing **user authentication and authorization**, **email verification**, **credential management and retrieving**, and **interactive commenting**.
- Developed user authentication from scratch, integrating HTTP-only cookies and JSON Web Tokens, along with automated token refresh logic for a seamless user experience.
- Designed and applied a microservices architecture employing **Docker, Kubernetes**, and **NATS** for inter-service communication, resulting in enhanced modularity and scalability.
- Strengthened security posture through the implementation of countermeasures against common network attacks, including Distributed Denial-of-Service (DDOS), Cross-Site Scripting (XSS), and Cross-Site Request Forgery (CSRF) attacks.
- Streamlined deployment pipelines using **GitHub Actions** to orchestrate automated deployments on **DigitalOcean Managed Kubernetes**, ensuring swift and consistent deployment of code changes to production.

TM-Notebook: Interactive JavaScript Code Editor — **05/2023**

- An interactive code editor that offers dynamic compilation and live output for JavaScript code and Markdown language using the technologies of **React**, **Redux**, **Express**, **Node.js**, TypeScript, **Docker**, and **Google Cloud Platform**.
- Implemented advanced features such as supporting npm package import and rendering JSX code snippets.
- Enriched user accessibility by enabling web-based coding through browsers and integrating a **Command Line Interface (CLI)** for local usage.
- Elevated user experience by introducing functionalities to add and remove editor blocks, as well as adjust block size and format code snippets.
- Empowered users to customize the local environment by specifying the desired file to open and port number for execution.

Education

Master of Science — **Carnegie Mellon University** — *Pittsburgh, PA* — **01/2022 - 05/2023**

- Major in Computational Design and Manufacturing

Bachelor of Science — **Rensselaer Polytechnic Institute** — *Troy, NY* — **08/2017 - 08/2021**

- Major in Mechanical Engineering

Related Courseworks

- Computer Science 1
- Java for Application Programmers
- Data Structures for Application Programmers
- Introduction to Computer Systems
- Engineering Computation
- Numerical Methods in Engineering