

# 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 | Jest
- **Tools & Platforms:** Docker | Kubernetes | Node.js | NATS | MySQL | MongoDB | Redis | Git | GitHub | Vercel | DigitalOcean
- **Others:** Linux Command | Microservice | CI/CD | OOP | Data Structures & Algorithms

## 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