Tianxiu Zhou

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Education

- **Texas A&M University**, Master of Computer Science *Aug 2023 – Expected May 2025*
- **Tsinghua University**, Bachelor of Biological Science *Aug 2019 – Jun 2023*

Skills

- **Frontend/Cross Platform Development**: React.js, React Native, Next.js, Gatsby.js, TailwindCSS, Bootstrap, TypeScript, JavaScript, CSS, HTML, ESBuild, Webpack, Redux, Zustand, Prototyping with Figma and Penpot
- **Backend Development**: FastAPI, Django, Flask, Spring Boot, Node.js, Express.js, MySQL, PostgreSQL, Redis, MongoDB
- **General Development Skills**: Git, Docker, AWS services, CI/CD, Postman, Swagger, Nginx, Apache, Linux proficiency
- **Programming Languages**: JavaScript, Python, Java, C++, C, SQL, HTML, CSS
- **Data Science and Machine Learning**: PyTorch, Pandas, Numpy, Xarray, reinforcement learning, D3.js, Matplotlib

Experience

- **Digital Twin-Based Smart City Platform** Texas A&M Univ.
  Full Stack Web & Mobile Development | *React.js, React Native, TailwindCSS, FastAPI, TypeScript, AWS* *Nov 2023 – Now*
  - Built a FastAPI based Python backend to perform domain specific data analysis and provide a RESTful API.
  - Containerized the backend application with Docker and deployed it with AWS AppRunner. Set up CI/CD with AWS CodeCommit, CodeBuild and CodeDeploy for automatic re-deployment.
  - Built a React.js based SPA website and achieved mobile-first responsive styling with TailwindCSS. Configured customized building workflow with ESBuild and PostCSS.
  - Hosted the website with AWS S3 and CloudFront. Configured DNS with AWS Route53 for secure HTTPS connection.
  - Developed a cross-platform mobile application with React Native and Expo. Implemented Material Design principles for styling. Built a performant plotting library with React Native Skia and D3.js for customized data visualization.
  - Configured automatic building pipeline with Expo and distributed the mobile app on Google Play and Apple App Store.
- **Social Network App for Aggies** Texas A&M Univ.
  Java Backend Development | *Spring Boot, Gradle, Redis, MongoDB, Java* *Sept 2023 – Nov 2023*
  - Built a Gradle-managed Java backend application for a social network app with the Spring Boot framework.
  - Implemented OOP principles and built the app in multiple layers of separated concerns including models, services, DAO and authentication.
  - Configured MongoDB and Redis for data persistence and managed database access with Spring Data.
- **cfOmics: Multi-Omics Liquid Biopsy Database and Website** Tsinghua Univ.
  Full Stack Web Development | *React.js, Express.js, Django, MySQL, Docker, Apache, Linux* *Mar 2022 – Jul 2023*
  - Developed a full stack website providing visualization and analytical tools for bioinformatics researchers.
  - Built an SPA frontend with React.js. Implemented client-side routing with react-router. Integrated Bootstrap 5 with custom CSS rules for styling. Built performant table components to display extremely large datasets with server-side pagination and sorting. Configured Webpack to use CDN externals for minimized built bundle size.
  - Collaborated with a fellow student to collect and process data from biological literatures. Built a MySQL database to organize and store data. Built an Express.js backend to provide a RESTful API to access the database.
  - Built a Django backend to provide visualization and analysis services. Used the Matplotlib and Plotly libraries to generate pre-rendered HTML plots.
  - Containerized the frontend and backend services using Docker and Docker Compose. Deployed the containerized application on a CentOS server. Configured Apache to provide web access.
- **Network Dissection of a DQN Agent Playing Super Mario Bros** Tsinghua Univ.
  Bachelor's Thesis Project | *PyTorch, Deep Reinforcement Learning, OpenAI Gym, Numpy* *Feb 2023 – Jun 2023*
  - Implemented in PyTorch the double DQN algorithm to train a reinforcement learning agent to beat Super Mario Bros.
  - Fine-tuned a semantic segmentation model for segmenting in-game scenes to generate training dataset for the DQN agent, based on DeepLab V3 ResNet-50.
  - Examined the correlation between activation of neurons in the DQN network and objects in the input scenes, in an effort to investigate the mechanism of neuron function generation.