Zhuoheng Li

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EDUCATION

University Of California, Davis — Davis, CA
B.S in Computer Science; GPA: 3.63/4.00 — *Sep 2020 - June 2024*

SKILLS

Languages: Python, TypeScript/JavaScript, C/C++, Java, HTML/CSS, SQL, Bash, regex
Technology: React.js, React Native, D3.js, GraphQL, Django, AWS(EC2, EKS, S3), Docker, K8s, PyTorch, Pandas
Database: SQLite, PostgreSQL, MongoDB, Firebase, Realm, Redis

EXPERIENCE

UC Davis Coffee Center — Feb 2022 - Present
Software Engineering Lead — *Davis, CA*

- Launched a Mobile coffee analytic App that accelerates digital transformations of coffee supply chain; collaborated with the machine learning team to develop the backend system and **led** the Mobile-End development.
- Designed a microservices-based architecture, utilizing Docker/Kubernetes for containerization and orchestration, Terraform and AWS EKS/IAM for secure and automated deployments, and GitHub Actions for **CI/CD**, resulting in significant improvements in scalability and availability.
- Developed mobile app pages for identity verification, coffee type selection/image uploading, and result display using React Native and its ecosystem based on Figma **prototypes**.
- Utilized Axios to send HTTP request to **REST API** Endpoint, with user-selected images as the request body, and stored analysis data returned by image analysis algorithms in MongoDB Atlas/Realm databases.
- Implemented result display page, utilizing GraphQL to query the required data from MongoDB database and d3.js to **dynamically visualize** the raw data as histograms based on user request.

RUbiNet Lab — Aug 2022 - Feb 2023
Machine Learning Engineer — *Davis, CA*

- Conducted research on improving the performance of **multimodal** model in medical image classification under **semi-supervised learning** setting.
- Pre-Processed PCam dataset contains **326K** Lymph node scans using Python, Pandas, and PyTorch.
- Implemented a Residual Feature Connection(RFC) layer on CLIP in optimizing learnable vectors extracted from image encoder, outperforming accuracy of Zero-Shot CLIP by **26.26%** with only **10%** of labeled data.
- Visualized high-dimensional feature embedding using Matplotlib and **T-SNE** algorithm in scikit-learn, providing a more intuitive way to evaluate model performance.
- **Under Review Publication**: "Path-CLIP: Efficient Adaptation of CLIP for Pathology Image Analysis with Limited Data", IEEE Transactions on Pattern Analysis and Machine Intelligence.

Collimate — Mar 2021 - Jan 2022
Software Engineer — *Davis, CA*

- Worked in an engineering team of 11, responsible for UI and functionality development of a college real-time chat application using agile process; achieved **700+ MAU** after first release.
- Developed a Homepage UI on Android and iOS devices, including side navigation menu, Class chat screen, and unread messages count, using React Native as the framework, and Realm as the local Database.
- Conducted unit, integration, and **end-to-end tests** on various devices to ensure UI functionality.

PROJECTS

DeepCoffee | *Python, TypeScript, OpenAI, React.js, Material UI* — April - June 2022

- Built a DeepCoffee Model with an accuracy of **83.2%** in coffee flavor prediction task using GPT-3 text-davinci-002 Engine fine-tuned with limited coffee flavor data of only **1300** entries.
- Designed a MLOps pipeline includes training, validating, and deploying, utilizing W&B and OpenAI API.
- Worked closely with UX Designer in implementing an interactive Web application that showcased model's flavor predicting ability based on prompts with React.js and **Material UI**.
- Customized Material UI's **autocomplete component** to enable enhanced auto complete function via OpenAI API and DeepCoffee model, using user input as prompt and model-predicted information as autocomplete results, thereby improving user experience.