brianfarrell.ie
github.com/branflakes6

Brian Farrell

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Education

California	**UC Santa Cruz**	**Sept 2022 – Sept 2023**

- M.S. Artificial Intelligence, GPA: 3.92. Student Ambassador

Dublin, IE	**Trinity College Dublin**	**Sept 2018 – May 2022**

- B.S. in Computer Science, First Class Honors (4.0). Book prize recipient 4 years in a row.
- **Algorithms and Data Structures TA**

Employment

AI Software Engineer	**NLP Lab @ UCSC**	**October 2023 - Present**

- Led a research project to develop an AI tutor that leverages retrieval augmented **Large Language Models** for educational purposes
- Led a team of five engineers, conducting weekly sprints, task delegation, and ensuring timely project deliverables
- Developed a **Python**-based backend API to support simultaneous usage by thousands of users, ensuring high performance and responsiveness
- Leveraged **GPT** models to deliver accurate answer generation while collecting data to **fine-tune** custom **LLaMa** and **DeepSeek** models
- Designed and implemented the frontend using **React** and **TypeScript** to allow users to interact with the assistant and create their own customized assistants
- Developed a Chrome extension that enables users to interact with customized tutors on any webpage
- Integrated audio to audio communication allowing users to speak to have spoken conversations with their tutor

Software Engineer Intern	**Salesforce**	**June – Sept 2021**

- Launched the development of an internal tool for automated sprint planning using **Python** and **SQL**
- Achieved a **50%** reduction in the time taken to create new sprint plans by automatically generating and assigning tasks
- Developed a slack app to act as a user interface, allowing project managers to quickly automate sprint creation using only a few commands

Software Engineer	**Trinity College Dublin SU**	**May 2021 – Dec 2021**

- Designed and implemented a custom CRM and File Storage System
- Implemented user accounts, account creation, user management, file processing, file storage and file management as well as a feature for taking and tracking member attendance at weekly meetings
- Assisted design and implementation of **JavaScript** frontend using **VueJS**
- Built an API using **GoLang** and **GoFiber** to process frontend HTTPS requests and store data in a **MongoDB** database

Software Engineer Contractor	**Invision Software Ireland**	**June 2019 – Jan 2021**

- Designed and built various websites using **HTML**, **CSS** and **JavaScript**
- Assisted in the development of **React Native** web apps. Implemented login systems and front-ends.
- Built **Python** scripts for data processing and visualisation of large datasets

Thesis

Retrieval Augmented QA

- **Retrieval Augmented Multimodal Open Domain QA:** For my masters thesis I designed and implemented an open source Retrieval Augmented Multimodal QA model. Mentored by **Dr. Bing Liu** and **Dr. Ian Lane**
- Added a retriever to the existing **open-flamingo** model to improve performance and experimenting with **chain-of-thought Prompting** to improve answer quality

Languages and Technologies

- Python, Go, JavaScript, TypeScript, Java, C, C++ , Haskell, SQL, HTML, CSS, Assembly, REST API's, AWS, Node.js, Next.js
- React Native, FastAPI, Vuejs, Pytorch, Langchain, GPT, AI, LLM, NLP, Git, Docker, Linux, Bootstrap, MATLAB, Machine Learning, RAG, CI/CD