

ARUL KUMARAN

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EXPERIENCE

Source Academy — Software Engineer (Part-time)

Jan 2025 - Present

Source Academy is an open-source platform for teaching programming with interactive visualization tools.

Singapore

- Developed an AI tool to provide automated feedback on students' code submissions in Source, a JavaScript variant.
- Built full-stack functionality, including backend logic for comment generation, database storage, and a frontend interface for teaching assistants to review AI-generated feedback.
- Performed prompt engineering and fine-tuned a LLaMA model to reduce token usage by providing additional Source language context, cutting AI processing costs.

GovTech Singapore — Software Engineer Intern

Apr 2024 - Aug 2024

Attached to TechPass, an IAM & SSO solution (powered by Microsoft Entra ID) for government services.

Singapore

- Automated test account provisioning, reducing manual support tickets by 75% across 10+ government agencies by developing a full-stack feature integrating Microsoft Graph API with an existing Golang IAM microservice.
- Developed a modular frontend user interface using Angular and TypeScript for listing and creating accounts, incorporating features like dynamic search filters, real-time data updates, and pagination to streamline user interactions.
- Designed and implemented a custom workflow for privileged test account creation, ensuring secure provisioning by leveraging Microsoft Entra ID's administrative units and role assignments, allowing for secure role-based access control.
- Enhanced IAM microservice scalability by integrating AWS SQS for asynchronous job processing and Redis for caching, reducing redundant Microsoft Graph API calls, improving response times, and ensuring reliable handling of high request loads.

NodeFlair — Software Engineer Intern

Nov 2023 - Apr 2024

NodeFlair is a Series A Startup that offers AI-powered tools for job seekers to streamline the job-seeking process

Singapore

- Enhanced and optimized the existing Ruby on Rails API to support large-scale, high-availability services and boost site performance and scalability for over 400,000 monthly users.
- Enhanced features of a browser extension that autofills job applications using TypeScript, React, and Plasmio, by adding new menus and expanding support for more ATS, like Ashby and Lever.
- Led localization efforts for a multi-language site, expanding international customer base by 20%.
- Implemented analytics tracking and A/B testing to optimise user experience, resulting in a 20% increase in click-through rate.
- Enhanced capabilities of AI-powered resume builder, including adding features to enhance job descriptions using AI.

PROJECTS

Learnly LMS | Node.js, Next.js, PostgreSQL, Express

- Developed and launched an LMS for freelance tutors with course management, assignment tracking, payments tracking, and student progress monitoring, achieving adoption by 50+ users.
- Built a full-stack system with a Node.js backend, PostgreSQL database, role-based access control, and Zoom Cloud Recordings integration. Implemented CI/CD pipelines with GitHub Actions for automated deployment and containerized the application.

Path Hero | Python, OpenCV, TensorFlow, Hugging Face Transformers, LLMs

- Developed an app that optimizes emergency evacuation routes and trains first responders using computer vision and LLMs.
- Implemented OpenCV and TensorFlow for floor plan analysis and LLMs for adaptive crisis response plan generation.

Minutes | FastAPI, Next.js, Large Language Models (LLMs)

- Developed an intelligent note editor for NUS Hack&Roll 2024 and won "Top 8 Hacks" Prize.
- Implemented features: WYSIWYG editor for notes, AI-generated quizzes based on notes' content, AI-based note inquiries.

EDUCATION

National University of Singapore

B.Comp Computer Science, Second Major in Statistics

Singapore

Expected Graduation: 2027

Raffles Institution

GCE 'A' Levels

Singapore

Feb 2020 - Dec 2021

TECHNICAL SKILLS

Languages: JavaScript, Python, Golang, Java, Ruby, HTML/CSS, C

Technologies/Frameworks: React.js, React Native, Node.js, GraphQL, Ruby on Rails, Django, Flask, Docker

Developer Tools: Git, VS Code, Visual Studio, Firebase, Supabase, AWS DynamoDB, Neo4j

Libraries: NumPy, pandas, Matplotlib, TensorFlow, PyTorch, LangChain, ThreeJS

MISC

Work Authorisation: Singapore Citizen; eligible for the **H-1B1** and **J-1** US visas or **HPI** UK visa with no petition required