ARUL KUMARAN

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WORK AUTHORISATION

Singapore Citizen; eligible for **H-1B1** (streamlined H-1B variant, easier to obtain), **J-1** US and **HPI** UK visas with no petition required.

EXPERIENCE

Nika — AI Engineer Intern   *May 2025 — Aug 2025*
Nika is an early-stage startup that builds AI-powered geospatial tools for various applications.   *Singapore*
- Developed a geospatial AI agent inspired by Cursor AI to automate dataset discovery and model selection.
- Developed an end-to-end automated analysis toolkit that, across 50+ benchmark tasks, correctly identified appropriate datasets and machine-learning pipelines 92% of the time, accelerating prototyping cycles by 50%.

Source Academy (NUS) — Software Engineer (Part-time)   *Jan 2025 — May 2025*
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.
- 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 by integrating Microsoft Graph API with a Golang IAM microservice, reducing manual support tickets by 75% across 10+ agencies.
- Built Angular components with real-time updates, dynamic search filters, and pagination to streamline account management.
- Implemented a secure test account workflow with custom privilege assignments using Microsoft Entra ID's admin units and role-based access controls.
- Improved service scalability by integrating AWS SQS and Redis, enhancing performance and reliability under high load.

NodeFlair — Software Engineer Intern   *Nov 2023 — Apr 2024*
NodeFlair is a Series A Startup that offers a AI-powered job-seeker platform.   *Singapore*
- Optimised Ruby on Rails API for 400,000+ monthly users, improving performance and availability.
- Enhanced features of a browser extension that autofills job applications using TypeScript, React, and Plasmo.
- Implemented localisation and A/B testing to grow users by 20% and boost click-through rate by 20%.

PROJECTS

Semantic CineGrade | *Python, PyTorch (MPS), DeepLabV3+, NVIDIA FastPhotoStyle*
- Developed a semantic-aware segmentation pipeline using PyTorch's DeepLabV3+ on the MPS backend to label each pixel (sky, foliage, skin, etc.) for targeted colour transform application.
- Adapted NVIDIA's FastPhotoStyle algorithm to learn and generate custom per-class 3D LUTs from user-supplied reference frames, enabling photorealistic cinematic looks.
- Implemented temporal consistency using a Kalman-filter-based smoothing module for LUT parameter sequences, eliminating frame-to-frame flicker in styled video outputs.

Learny 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.

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, LLM-generated quizzes based on notes' content, LLM-based note inquiries.

EDUCATION

National University of Singapore   Singapore
B.Comp (Hons) Computer Science   *Expected Graduation: 2027*

Raffles Institution   Singapore
GCE 'A' Levels   *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