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
Singapore

Nika is an early-stage startup that is building an AI-native geospatial software suite.
- Developed a geospatial AI agent inspired by Cursor AI to automate dataset discovery and ML model selection, delivering an end-to-end toolkit across 50+ benchmark geospatial tasks with 92% accuracy in selecting the appropriate workflow.
- Engineered a two-stage semantic search pipeline using Cloudflare Vectorize (HNSW ANN) for sub-50 ms retrieval, and a LoRA-fine-tuned Cross-Encoder reranker, achieving 30% improvement in precision@1 within 150 ms end-to-end latency.
- Developed a continuous LLM evaluation framework with automated regression tests to validate and safeguard agent outputs.

GovTech Singapore — Software Engineer Intern
Apr 2024 — Aug 2024
Singapore

Attached to TechPass, an IAM & SSO solution powered by Microsoft Entra ID for government services
- Automated the creation of test accounts in bulk, reducing manual support tickets by 75% across 10+ agencies.
- Implemented a secure test account workflow with custom privilege assignments using Microsoft Entra ID's admin units and role-based access controls.
- Provisioned infrastructure as code with Terraform and deployed microservices on AWS ECS, configuring Redis and AWS SQS for scalable session management and job queues.
- Built Angular components with real-time updates, dynamic search filters, and pagination to streamline account management.

NodeFlair — Software Engineer Intern
Nov 2023 — Apr 2024
Singapore

NodeFlair is a Series A startup that offers an AI-powered job-seeker platform.
- Extended existing API on the Ruby on Rails backend to accommodate new features, enhancing site capabilities.
- Enhanced features of a browser extension that autofills job applications using TypeScript, React and Plasmo, by adding new menus and expanding support for more ATS such as Ashby and Lever.
- Spearheaded localisation support for a multi-language website, expanding the customer base by 20% in international markets.
- Implemented analytics tracking and A/B testing to optimise user experience, resulting in a 20% increase in click-through rate.
- Enhanced capabilities of the AI-powered resume builder, including new features to improve job descriptions using AI.

Source Academy (NUS) — AI Engineer (Part-time)
Jan 2025 — May 2025
Singapore

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

PROJECTS

Semantic CineGrade | *Python, PyTorch (MPS), DeepLabV3+, NVIDIA FastPhotoStyle*
- Developed a cinematic colour grading system that applies semantic-aware style transfer with per-class adjustments and temporal stability.
- Leveraged DeepLabV3+ on Apple MPS for real-time per-pixel class masks and extended NVIDIA FastPhotoStyle to learn custom per-class 3D LUTs for photorealistic grading.
- Integrated a Kalman-filter-based smoothing module on LUT parameter sequences to eliminate frame-to-frame flicker and ensure temporal consistency.

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 containerised the application.

EDUCATION

National University of Singapore
Singapore

B.Comp (Hons) Computer Science — GPA: 4.9/5.0
Expected Graduation: 2027

Raffles Institution
Singapore

GCE 'A' Levels
Feb 2020 — Dec 2021

TECHNICAL SKILLS

Languages: JavaScript, Python, Golang, Java, C++, Ruby, HTML/CSS
Technologies/Frameworks: React.js, Node.js, GraphQL, Ruby on Rails, Spring Boot, FastAPI, Django, Flask, Docker
Developer Tools: Git, VS Code, Visual Studio, Firebase, Supabase, AWS DynamoDB, Neo4j
Libraries: NumPy, pandas, Matplotlib, TensorFlow, PyTorch, LangChain, ThreeJS