Ryan Teo

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Experience

SEP 2025 – DEC 2025

3D Deep Learning Intern @ A*STAR - Agency for Science, Technology and Research

- **Benchmarked multiple YOLO architectures** to establish performance baselines for a 2D object-detection pipeline that serves as a precursor to 3D localisation.
- Implemented new **data augmentation strategies** to improve model robustness and generalisation.
- Built streamlined **inference, evaluation, and visualisation tooling** to accelerate debugging and iteration.
- **Optimised the training pipeline** to reduce turnaround time and improve overall throughput.
- Developed an **offline CSV-to-report generation tool** using local language models to replace a cloud-based workflow.
- Implemented programmatic statistical distillation to convert CSV data into LLM-friendly inputs for reliable report generation.

SEP 2020 – FEB 2021

Security Operations Centre Intern @ Housing & Development Board (HDB)

- Engineered end-to-end **Extract, Transform, Load (ETL)** pipelines in Python to ingest, cleanse and normalize cyber threat intelligence feeds, **boosting data coverage** for downstream analytics and **slashing manual data-tracking effort**.
- **Redesigned and rebuilt the legacy domain fraud detection system** in Python, building a **fully automated pipeline** and applying statistical analysis and rule-based heuristics to **reduce false positives** and **significantly cut analyst review time**.
- **Authored documentation** and user guides to support smooth onboarding and end-user adoption of the new systems.

Education

SEP 2023 – APR 2027

Singapore University of Technology and Design (SUTD)

- Bachelor of Engineering, Computer Science & Design • 3.95 GPA

FEB 2018 – APR 2021

Temasek Polytechnic – School of Informatics & IT

- Diploma in Cybersecurity & Digital Forensics • 3.55 GPA

Academic Projects

MAY 2025 – AUG 2025

Wayfare – A Hotel Booking Website • *50.003 Elements of Software Construction* • [GitHub] • [View More]

- Collaborated in a team of eight to fulfil the **full-stack development** of a fully featured hotel booking platform, designed in **Figma** and architected with **React** and **TypeScript** on the frontend and **NestJS** in the backend.
- Developed key pages and user flows, including the **landing page**, **dynamic search and filtering**, and **user account handling** and **authentication flows**, using Mantine UI for rapid prototyping and TanStack Router for client-side routing.
- Integrated frontend with backend APIs using TanStack Query & Axios for performant data fetching and caching, and Zod for form validation and robust data handling.
- Optimized frontend performance with lazy loading, asset compression, and route-based code splitting.
- Implemented unit, integration, and end-to-end tests using **Vitest**, **React Testing Library**, and **Playwright** to enforce code correctness and catch regressions early during development.
- Set up modern dev workflows and **CI/CD pipelines**: automatic deployments with **Cloudflare Pages**, continuous integration with **GitHub Actions** for builds and tests, and code quality enforcement using Husky, lint-staged, ESLint, and Prettier.
- Built interactive UI features across the stack: React-Leaflet for map-based search, Three.js & GLSL shaders for landing page visuals, and React-Spring for UI animations.
- Set up a Kanban board workflow in GitHub Projects, adopting **Agile** principles for iterative delivery and shared task ownership.

JAN 2025 – APR 2025

Blink – A Social Platform Android App • *50.001 Information Systems & Programming* • [[GitHub]](…) • [[View More]](…)

- Collaborated in a group of three to fulfil the **full-stack development** of a fully featured social platform Android application, implementing both **frontend** and **backend** features.
- Built the application in **Java** using **Android Studio** with a backend powered by **Firebase** services.
- Developed and integrated **real-time messaging** functionality using **Firebase Realtime Database**, enabling seamless communication between users.
- Implemented **user authentication** with **Firebase Authentication**, allowing secure sign-up, login, and profile management.
- Designed and integrated **profile pages**, allowing users to update personal details and set profile pictures, with data stored in **Firebase Firestore**.
- Used **Firebase Cloud Storage** to efficiently manage and store user-uploaded media files (e.g., images, videos).
- Added **push notifications** using **Firebase Cloud Messaging**, providing instant updates on new messages and activities.
- Collaborated via **Git** for version control and **GitHub** for task management, ensuring efficient teamwork and project progress.

Personal Projects

Portfolio Website • Interactive Desktop Interface • [[Visit 2D Site]](…) • [[Visit 3D Showcase]](…) • [[GitHub]](…)

- Developed an interactive desktop-inspired portfolio in **React** & **TypeScript**, featuring multi-window management and canvas animations, while maintaining **99 Lighthouse performance** through **optimised asset delivery**.
- Created an immersive **3D showcase environment** in **Blender**, rendered to the web using **React Three Fiber** to display the portfolio website in a spatial setting. • [[Visit 3D Showcase]](…) • [[GitHub]](…)
- Architected **custom window management system** featuring drag-and-drop, focus states, and concurrent window coordination using **Zustand** state management.
- Showcases technical projects with **MDX-powered content**, enabling rich documentation and interactive components.
- Implemented **responsive design** with mobile-first design principles using **Tailwind CSS**, adapting desktop metaphors for mobile devices using custom hooks for viewport-aware component rendering.
- **Automated asset optimisation pipeline** using **Python** and **Pillow** to batch-convert source images into multiple formats (AVIF, WebP, JPG), reducing manual build steps and ensuring consistent output structure.

ArXiv Semantic Search Engine • [[GitHub]](…)

- Built a lightweight semantic search engine for arXiv papers using core Retrieval-Augmented Generation (RAG) components.
- Designed ETL pipeline: collect data via arXiv API, preprocess abstracts, and generate SentenceTransformer embeddings.
- Implemented persistent vector storage with ChromaDB and similarity search for natural language queries via CLI.
- Applied NLP techniques, vector database management, and pipeline engineering for semantic retrieval.

Animation Gallery • [[View Site]](…) • [[GitHub]](…)

- Developed in **React**, a personal library of custom UI micro-interactions and effects, built using **Framer Motion** for smooth motion and **Tailwind CSS** utility classes for rapid styling and consistency.

Real-Time Audio Visualizer with WebGL • [[View Demo]](…) • [[GitHub]](…)

- Built a real-time audio visualizer with Web Audio API and custom GLSL shaders for waveform and spectrum rendering.

Skills

Languages: TypeScript • JavaScript • Python • Java • SQL • C#
Web: React • Vite • Node.js • Tailwind • Three.js • WebGL • Framer Motion • ShadCN • HTML/CSS
Tools: Git • VS Code • GitHub Actions • Figma • PostgreSQL • MySQL • Firebase • Android Studio
Concepts: REST APIs • Agile • Scrum • OOP • CI/CD • Functional Programming
Soft Skills: Leadership • Cross-functional collaboration • Communication • Documentation • Problem solving • Adaptability