ARCHIT BHULLAR

Bachelor of Software Engineering (Penultimate Year) · Deakin University

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PROFESSIONAL SUMMARY

Penultimate-year Software Engineering student with hands-on experience leading full-stack teams, integrating AI/ML into production-style systems, and delivering across web, distributed, and cloud-adjacent architectures. Led a cross-functional capstone app team through end-to-end RESTful API design and delivery, mentoring 10+ contributors and producing technical documentation. Combines strong CS fundamentals (parallel computing, FSM design) with product-minded thinking from independent UI/UX work, and brings genuine curiosity for solving real-world technical problems in collaborative, agile environments. Currently on a Student Visa (Subclass 500), automatically eligible for a Temporary Graduate Visa (Subclass 485) post-graduation - no sponsorship required.

EDUCATION

Bachelor of Software Engineering *Expected Nov 2027*

Deakin University, Melbourne VIC

KEY SKILLS

- Languages: Python, C++, C#, JavaScript, TypeScript, SQL
- Frontend: React.js, Next.js, Vite, HTML5, CSS3, Tailwind CSS, shadcn/ui, React Flow, Zustand, TanStack Query
- Backend & Cloud: Node.js, Fastify, Express.js, REST APIs, Microservices, Azure, Docker, Vercel, GitHub Actions, CI/CD
- Data: MongoDB, PostgreSQL, MySQL, ORM, data visualisation
- AI/ML: LLMs, Transformer architecture, RAG, fine-tuning, NLU pipeline design (Rasa, DIETClassifier, TEDPolicy), ML microservice integration
- Testing & Methodology: JUnit, Selenium, TDD, Agile/Scrum, MVC Architecture, Git/GitFlow
- Robotics & Systems: ROS, Python, FSM design, sensor integration (AprilTag, ToF, IMU)

EXPERIENCE

App Team Leader - EVAT (Electric Vehicle Asset Tracker) *2026 – Present*

Chameleon Company, Deakin University · React.js · Node.js · Python · MongoDB · REST APIs · Rasa NLU · Git

- Led a cross-functional app development team through full-stack delivery, coordinating backend, frontend, and cross-team API integration on a production-style capstone platform used to compare EV charging costs and infrastructure
- Delivered a Python ML microservice for cost-comparison analysis, integrating a trained model with the Node.js backend to surface data-driven EV charging insights
- Built four React.js data visualisation components, translating cost-comparison data into an intuitive, responsive UI
- Mentored and unblocked 10+ contributors via structured 1:1s and end-to-end technical documentation, including local environment setup guides, cutting onboarding friction for new team members
- Built an AI-powered EV Charging Assistant from scratch on Rasa, designing a complete NLU pipeline (DIETClassifier for joint intent classification and entity extraction, TEDPolicy for multi-turn dialogue management, UnexpecTEDIntentPolicy for out-of-flow handling, and a retrieval-based ResponseSelector) trained on a custom conversational dataset
- Engineered the assistant to resolve natural multi-entity queries (e.g. vehicle model, connector type, suburb) into geocoded coordinates and live nearest-station results with distance, cost, and power output returned in a single conversational turn
- Built the production React frontend rendering the assistant's full conversational payload: station cards, embedded Google Maps directions with real-time ETA, live traffic/congestion cards, and interactive response chips to close the gap between EV charging infrastructure availability and user awareness as Australia's EV adoption accelerates
- Implemented a Retrieval-Augmented Generation (RAG) layer to ground assistant responses in EV charging domain knowledge, improving answer accuracy for queries beyond the core NLU pipeline's trained intents

QA Assistant *Jun 2024 – Nov 2024*

Cosmax, Melbourne VIC

- Built a Laboratory Information Management System (LIMS), replacing manual paper-based sample tracking with structured digital records and audit trails
- Designed a relational database schema spanning the full sample lifecycle (collection to disposal), improving traceability and supporting regulatory compliance
- Automated workflow steps in the testing process, reducing manual data entry errors and improving lab operational efficiency
- Applied quality control procedures across multiple product lines in a regulated laboratory environment

PROJECTS

Distributed Dijkstra Algorithm using MPI

C++ · Python · OpenMPI · Bulk Synchronous Parallel (BSP) Model

- Built a distributed shortest-path system in C++, parallelising Dijkstra's algorithm across up to 6 MPI processes using SPMD execution
- Implemented round-robin node partitioning and per-superstep MPI_Allreduce synchronisation for distance convergence detection
- Benchmarked across graph sizes of 10K–100K nodes, achieving up to 2.31x speedup at 57.8% parallel efficiency on 20K-node graphs with 4 processes

NodeMap - Codebase Architecture Visualisation Platform *github.com/Architbh007/NodeMap*

React 18 · TypeScript · Vite · Fastify · React Flow · Azure · pnpm Monorepo · Deployed (Frontend + Backend)

- Originated and architected a full-stack platform that turns uploaded repositories into interactive, explorable dependency graphs with risk scoring, circular dependency detection, dead-code detection, and impact analysis
- Built a ZIP upload and file-system scanner pipeline with AST parsing (ts-morph) and dependency resolution to construct an accurate, navigable graph model of a codebase
- Implemented an expandable graph explorer in React Flow (dagre layout) with multiple graph modes: folder structure, dependencies, API flow, risk, and impact alongside search and export functionality
- Built API flow tracing (Route → Controller → Service → Repository) and an intelligence dashboard summarising architectural health across a repository
- Designed a pnpm monorepo (React 18 + Vite + TypeScript frontend, Fastify API) with an Azure-hosted web database as the storage layer
- Deployed the full application to production, with the frontend and backend both hosted and publicly accessible

Duckiebot Autonomous Autopilot System

ROS · Python · Embedded C++ · Computer Vision · FSM Architecture

- Designed a full autonomous behaviour system integrating AprilTag sign detection, ToF proximity sensing, and encoder feedback into a unified FSM-controlled architecture
- Replaced open-loop, time-based turning with closed-loop encoder-tick turning, improving turn accuracy across varying floor friction and battery conditions
- Implemented FSM state management with a force-stop override to cleanly suppress controller bleed-through between operating modes

GridRace - Social Energy Usage App *Watt The Hack Hackathon (MLAI, sponsored by OpenAI Codex/Base44)*

Product Design · UI/UX · Frontend Architecture

- Ideated and designed a Strava-style social platform gamifying household energy usage, owning the project from concept through technical architecture and build prompts
- Produced a desktop UI redesign to improve usability and visual clarity of the energy-tracking and social-feed experience
- Delivered end-to-end hackathon output including frontend/backend build specifications and post-event project write-up