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Summary & Objective

Full stack software engineer with over 25 years' experience delivering scalable, user-focused applications across Defence, government, science, and enterprise environments. Strong capability across front-end and back-end development, including modern JavaScript frameworks, APIs, and cloud-based systems, with a focus on usability, accessibility, and maintainable design. Experience includes delivery of AI/ML-enabled solutions and more recent work with Generative AI and RAG systems, complementing a broad and pragmatic engineering background. I am keen to continue honing these skills and adapt to the ever-evolving technical landscape.

Skills

Data Engineering, ETL & Analytics

- ETL design and implementation (structured ingestion, validation, reconciliation)
- Transformation pipelines (structured content, XML/SGML, publishing workflows)
- Data quality practices (automated checks against known source-of-truth datasets)
- Logging pipelines and ingestion (Elastic stack / ELK and Logstash)

Programming Languages

- Java (SE, EE), Spring, Spring Boot
- JavaScript, TypeScript
- Python
- C# (ASP.Net)
- C++, SQL
- Perl (used at **Butterworths** and **Boeing**)
- Omnimark

APIs, Integration & Services

- REST API design and implementation
- Service design and integration patterns
- Asynchronous messaging patterns (JMS / Apache MQ; RabbitMQ/JMS usage context)
- Workflow automation and system integration design

Databases & Data Stores

- PostgreSQL, MongoDB, Oracle, SQL Server, Derby
- Schema design, data modelling and reconciliation
- Replication and failover architecture patterns (where implemented)
- Experience with “internal platform” database offerings in government environments (MongoDB/PostgreSQL provided services)

DevOps, CI/CD & Cloud

- Docker, Kubernetes
- CI/CD pipelines: GitHub Actions, Azure DevOps (YAML), Jenkins, Bamboo CI
- Infrastructure-as-code: Terraform, ARM templates
- AWS: EC2, S3, Lambda, IAM, ALB, Route53 (used as per roles)
- Azure: Web Apps, Monitor, Defender, Cognitive Services (incl. LUIS)
- GCP: Kubernetes deployments (Fifth Domain)

Observability & Operations

- Application monitoring: Azure Monitor, New Relic
- Security monitoring: Azure Defender
- Log aggregation & analysis: Splunk, ELK stack (Elasticsearch, Logstash)
- Logging & telemetry practices: structured logging, application telemetry, operational monitoring and alerting patterns

Operating Systems & Scripting

- Linux development and deployment environments
- Shell scripting and automation
- PowerShell (where relevant in publishing / tooling contexts)

Version Control & Collaboration

- Git, SVN, TFS (migration to Git where applicable)
- Jira, Confluence (delivery collaboration and documentation)

Tools & Development Environments

- Modern IDEs and toolchains across Java/Node/Python ecosystems
- Automated testing toolchains appropriate to stack (e.g., JUnit and Java testing patterns; JS testing patterns where applicable)
- HubSpot (CRM configuration and integration)

Markup, Structured Content & Standards

- XML, SGML structured content pipelines

- Aerospace and publishing standards exposure (iSpec-2100 / ATA / S1000D contexts across career)
- XSLT transformations (notably in government and publishing contexts)

Methodologies & Delivery

- Agile delivery across roles (Scrum-based teams where specified)
- Requirements-to-implementation translation with stakeholders
- Technical documentation in regulated and government contexts
- SRDD — Spec-Roundtrip Driven Development Methodology - Owner developed - see publications

AI / ML & Advanced Analytics

- Azure Cognitive Services and LUIS experience in Human Services context
- Python ML workflows (Jupyter, scikit-learn, Pandas, NumPy, Matplotlib)
- Generative AI: LLM integration, RAG architecture (LangChain, vector DB workflows)
- AI coding tools for accelerated delivery and validation (Claude, Claude Code)

Security & Quality

- OWASP review practices (where applied)
- Secure delivery posture in government/enterprise contexts
- Quality gates and static analysis (e.g., SonarQube where used)
- Authentication patterns: OAuth2 / tokens, JWT usage patterns
- Identity providers: Azure and Google provider-backed authentication flows (where used)

Service Management

- Production support practices where relevant
- Operational monitoring, telemetry, and alerting (Azure Monitor and Defender usage explained under role)

Professional Experience

CASA (Civil Aviation Safety Authority) – Senior Full Stack Engineer, Portal Development (2026)

- Delivered React + C# full-stack across the MyCASA customer-facing portal (10-app micro-frontend architecture, Azure DevOps, Azure AD B2C) — including a net-new full-stack micro-frontend, a designer-adopted prototype for a drone bulk-operations workflow, and a self-raised catch-all-route defect delivered end-to-end

- Established the first React frontend unit-testing practice across the codebase (React Testing Library + Jest); adopted as the going-forward pattern on all subsequent feature delivery
- Discovered Portal.Api unit tests had never been executed by CI and wired them into azure-pipelines.yml, with integration-test filtering so unrelated APIs' pipelines remained unaffected
- Delivered a 64-file backend refactor across Forms.Api and Organisation.Api, modernising legacy call-sites in a single coordinated change
- Authored a set of architectural analyses delivered as reviewable plan documents: typed-Redux state-access convention (grounded in measurement of 2,947 `useSelector` call sites across the 10 apps; ~67% untyped); session-timeout defect analysis separating client-side inactivity from Azure AD B2C token expiry (three defects surfaced including one security-relevant); a full backend architecture plan for a new submit-path handler on myCASA.API
- Produced a formal code-review advisory paper on an adjacent EAP.Java.PrintTemplates codebase during a Jasper Reports secondment — structural code-quality analysis with a sequenced remediation plan (deeper analysis → characterisation tests → refactor) — accepted by the manager onto the forward engineering roadmap
- Prepared and delivered a Mythos-class LLM threat briefing to the client's Cyber Security team (CC'd to management), covering operational implications for enterprise security architectures under LLM-driven adversary capability — automated vulnerability discovery, chained exploits, and the changed threat model for Advanced Persistent Threats
- Built and delivered a hands-on AI-assisted project-management demonstration pack for management — a fictional organisation with mock staff, real IT/development systems, and mock meetings/actions, designed for direct evaluation of AI-in-PM capability against real workflows in under an hour; complemented by a CASA-appropriate adoption scenario pack for security-classified work
- Ran a dependency-hygiene programme across the myCASA React codebase (`npm audit` sweeps; in-flight correctness fixes including an Enzyme adapter version mismatch) and assembled a curated engineering backlog of security-severe and architectural items for staged team surfacing
- Authored a developer-onboarding knowledge base (dev-environment setup, npm auth, git-clone OAuth, nvm-Node install) drawn from own onboarding experience — demonstrably assisted a subsequent new starter onto the MyCASA stack

Skills: React, TypeScript, C# / .NET, micro-frontend architecture, Redux (Hooks), Formik, Azure DevOps, Azure AD B2C, Azure Pipelines (yaml), Jest, React Testing Library, Playwright, MSTest, Java, Jasper Reports, dependency hygiene / security review, technical writing and architectural analysis, LLM security analysis, AI tooling for team productivity, developer-experience documentation

Bespoke Works Studio – Founder & Principal Engineer (2025 – Present)

Established Bespoke Automation to design and build automation systems, AI-enabled tools and workflow platforms for organisations seeking to modernise operational processes. Work focuses on reducing manual administration, integrating cloud services and deploying automation pipelines within client environments.

Systems, processes and tooling are being developed with the goal of scaling Bespoke Automation into a franchise model capable of delivering automation and AI-enabled workflow solutions across multiple operators.

ACT Building and Construction Industry Training Fund Authority (TFA) — HubSpot Training Register Integration (2026 – Ongoing)

- Won competitive ACT Government RFQ. Designed and delivered a code-free CRM integration replacing Excel-based training registers with native HubSpot configuration — Courses object, pipelines, associations, rollup properties, and live dashboards — on the existing Professional tier with no subscription upgrade
- Migrated historical training data with automated validation using Python test tooling via the HubSpot API, ensuring funding totals, places used, and remaining balances matched known spreadsheet values
- Worked directly with the CEO and stakeholders to align technical design with business terminology and operational workflows; delivered staff training and comprehensive project documentation
- Leveraged AI tools (Claude, Claude Code) throughout for business case development, submission drafting, technical validation, and configuration planning

Skills: HubSpot (Professional tier configuration), HubSpot API, Python validation tooling, CRM modelling, reporting/dashboards, executive stakeholder engagement, documentation/training, Claude Code and other AI tools

DM Unify Pty Ltd — SMSF Workflow Tracker (2026)

- Engaged to design a workflow tracking system to replace paper-based management of ~40 SMSF client workflows across 12 accounting stages
- Defined solution architecture leveraging SharePoint Framework (SPFx) with TypeScript/React within the client's existing Microsoft 365 environment
- Developed initial system design, delivery roadmap, and phased implementation plan including:
 - Manual tracker MVP
 - Email and OneDrive monitoring integration

- Automated reminders and workflow progression
- Messaging integration (planned)
- Conducted requirements gathering and stakeholder discussions to align technical approach with business processes
- Development is currently in early stages, with design and planning forming the primary completed work to date

Skills: SPFx (design and architecture), TypeScript, React, Microsoft 365, workflow modelling, stakeholder engagement, solution design, Claude Code and other AI tools

Pennant PLC – Omnimark Consultant (2024 – 2025)

- Converted ATA publications into iSpec-2100 SGML format
- Containerised legacy Omnimark environments using Docker across ARM and Windows platforms
- Deployed 32-bit Linux Omnimark in Docker on 64-bit ARM MacOS and Windows
- Authored a technical article on this deployment method: <https://bbosmith.medium.com/running-32-bit-i386-applications-on-64-bit-arm-using-docker-de7a198914a2>
- Authored technical documentation supporting deployment and publishing workflows; worked with international aerospace stakeholders

Skills: Omnimark, SGML, iSpec-2100, Linux, Docker, PowerShell, aerospace publishing standards, technical documentation

CSIRO – Full Stack Engineer (2024)

- Reworked the Eye on Water web application using React and Leaflet integrated into a WordPress environment
- Improved maintainability and modularity of the frontend and data/event flows
- Collaborated with aquatic scientists (incl. international collaborators) to align system behaviour with real research workflows and constraints

Skills: React, TypeScript, Leaflet, WordPress integration, RXJS, GIS concepts, scientist collaboration

Flight Centre – Senior Software Engineer (2022 – 2023)

- Worked on the Flights Global Booking System supporting travel rules, pricing, eligibility logic, and platform reliability
- Designed and built backend services across Node.js and Java EE 8 components
- Helped drive consistency through NestJS patterns for service structure and maintainability

- Containerised services and supported deployments via Docker and Kubernetes
- Implemented CI/CD using GitHub Actions, focusing on reliable delivery and repeatable builds
- Performed OWASP security reviews and supported secure-by-default practices
- Routinely translated product and UX conversations into implementation-ready logic; ensured coverage extended to edge cases affecting travel rules, price rounding, and eligibility

Skills: Node.js, NestJS, Java EE 8, Docker, Kubernetes, GitHub Actions, OWASP review practices, Splunk, New Relic

Insurance Australia Group (IAG) – Full Stack Engineer (2021 – 2022)

- Designed and implemented full-stack Node.js/React application backed by MongoDB
- Deployed services in a containerised environment on Kubernetes (Rancher)
- Implemented OAuth-based authentication and secure access patterns
- Built ingestion and transformation pipelines supporting data reconciliation and operational reporting
- Contributed to database failover strategies and horizontal scalability planning and implementation
- Designed and implemented **PSSSA MongoDB ReplicaSet for multi-domain architecture**
- **Co-designed a cross-region active/passive disaster-recovery architecture using AWS Application Load Balancers and Route53 DNS failover**, enabling automated health checks, controlled cutover, and improved resilience during regional outages

Skills: Node.js, React, MongoDB, MongoDB ReplicaSets, Kubernetes, Rancher, Docker, OAuth2, AWS (ALB, Route53), resilience/DR design

Department of Agriculture, Environment and Water Resources – Full Stack Engineer (2021)

- Developed with Java EE, React, XSLT, Drools, database technologies and Azure DevOps pipelines
- Delivered the Rollback project to provide contingency fallback to legacy exports system
- Reused rollback data sources to power health and reporting dashboards
- Collaborated with testers and infrastructure teams on deployments and integration

Skills: Java EE, React, XSLT, Drools, Azure DevOps, databases, dashboards/reporting, stakeholder collaboration

Fifth Domain – Senior Software Engineer (2020)

- Developed Node.js microservices deployed to Kubernetes supporting scalable containerised service architecture deployed to Docker and Kubernetes on GCP
- Built React + Redux dashboards integrated via GraphQL (Apollo)
- Collaborated with UX designers (Figma) and stakeholders to implement training scenarios
- Delivered in a cybersecurity training context with secure and isolated environments

Skills: Node.js, TypeScript, React, Redux, GraphQL (Apollo), PostgreSQL, Docker, Kubernetes, GCP, GitLab, Figma

MOD – Senior Software Engineer (2020)

- Supported deployments of Mozilla Hubs VR environments
- Assisted with Linux-based infrastructure tasks and operational support
- Contributed to XR-related publishing workflows, including Adobe InDesign usage where required

Skills: React, Linux, Mozilla Hubs, Adobe InDesign, VR/XR production support

CSIRO – Frontend Developer (2019 – 2020)

- Delivered and improved frontend features for the Eye on Water platform
- Worked closely with aquatic scientists and international collaborators to support data workflows and usability improvements
- Applied functional and algorithmic thinking to improve responsiveness and data handling under real-world constraints

Skills: JavaScript/TypeScript, RXJS, web app development, data/event handling, scientist collaboration

Department of Human Services – Senior Software Engineer (2018 – 2019)

I worked in the Cognitive Services team delivering bespoke internal systems and AI-enabled translation and chatbot tooling and delivered bespoke projects including:

- **Translate API:** Developed a Node.js and Express-based API enabling dynamic web page translation across the DHS network for non-English speakers. Implemented caching of translated content in Azure Cosmos DB (MongoDB API) to optimise performance, reducing reliance on Azure Cognitive Services by only invoking translation services when required.
- **Bottal:** Built an internal application using Node.js, NestJS, and Angular 7 to support chatbot development. Enabled business users to define and

manage utterances (user inputs) and intents (semantic meaning), which were used to train machine learning models powering DHS chatbot services.

- **Translate Board:** Delivered a Node.js, NestJS, and Angular 7 application that allowed human editors to curate and manage preferred translations. These curated translations could override machine-generated outputs from the Translate API, improving linguistic accuracy and handling nuanced language cases.
- **Translatorator:** Developed a Node.js, NestJS, and React application to evaluate machine translation performance. Facilitated structured feedback from professional translators, who assessed and ranked outputs from multiple sources, including Google Translate, Azure Cognitive Services (standard and custom DHS-trained models), and human translations.
- **Translate Survey:** Designed and implemented a Node.js, NestJS, and React application to collect and analyse translation quality data. Enabled professional translators to rate translation outputs, with results aggregated and visualised in Power BI to support model evaluation and improvement.

Responsibilities and technology:

- Built shared APIs and bespoke client/server applications using Node.js backends and Angular/React frontends
- Integrated Azure Cognitive Services and LUIS
- Used Azure Web Apps as a deployment target for hosted services
- Worked with internal platform-provided MongoDB and PostgreSQL service offerings
- Used Azure storage patterns for object storage needs (Blob-style storage where appropriate)
- Developed Python ML workflows using Jupyter, scikit-learn, Pandas, NumPy, and Matplotlib for experimentation, evaluation, and supporting tooling
- Configured Azure DevOps YAML pipelines and provisioned resources with ARM templates
- Implemented Azure Monitor and Azure Defender to provide operational telemetry, alerting, and security posture monitoring (supporting production stability, incident response, and compliance expectations)

Skills: Node.js, NestJS, Angular, React, Python, Azure Cognitive Services, LUIS, Azure Web Apps, Azure DevOps, ARM, Azure Monitor, Azure Defender, Jupyter, scikit-learn, Pandas, NumPy, Matplotlib

Oakton – Senior Consultant (2018)

- Prime consulting work for the Department of Veterans’ Affairs (DVA) including an Angular website
- Conducted WCAG accessibility analysis and implemented HTML/CSS/Angular fixes
- Ensured compliance with government digital accessibility standards
- Used automated tooling (e.g., Lighthouse-style checks) alongside manual review to identify issues and confirm remediation
- Also performed in-house (Oakton) Java work on internal systems

Skills: Angular, HTML, CSS, WCAG, accessibility remediation, Google Lighthouse-style tooling, Java, consulting delivery

Department of Agriculture and Water Resources – Senior Software Engineer (2017 – 2018)

- Developed with C# ASP.Net, JavaScript, and SQL Server
- Migrated source control from TFS to Git and scripted SQL deployments
- Designed CI/CD pipelines for more reliable delivery
- Collaborated with testers and infrastructure teams on deployments

Skills: ASP.Net, C#, JavaScript, SQL Server, TFS, Git, Jira, Adobe Experience Manager, Agile

Geoscience Australia – Senior Web Developer (2015 – 2017)

- Built the Geodesy Site Manager using Spring Java and Angular (2–5)
- Deployed workloads on AWS using EC2 and S3
- Implemented AWS Lambda utilities used by remote workers to incorporate additional information into system databases (e.g., supplementary documentation not suitable for the main web portal)
- Wrote Service Workers to support offline-first workflows for geodesy specialists working in remote locations with intermittent connectivity
- Introduced SonarQube into CI/CD pipelines to enforce quality gates and improve maintainability
- Application remains publicly accessible and actively used by geoscientists: <https://gnss-site-manager.geodesy.ga.gov.au/>

Skills: Spring Java, Angular 2–5, AWS (EC2, S3, Lambda), Service Workers, offline web apps, Terraform (where used), SonarQube, OAuth/token auth patterns

APIR Systems – Java Software Engineer (2015)

- Hardened the codebase and improved overall reliability, maintainability, and deployment consistency
- Migrated version control from SVN to Git and modernised build tooling from Ant to Gradle

- Re-architected legacy J2EE applications onto the Spring Framework and Spring Boot, simplifying runtime bootstrap, dependency management, configuration consistency, and deployment workflows
- Worked with JSF- and JQuery-based frontend systems as part of the broader application modernisation effort, improving maintainability, usability, and frontend/backend integration patterns
- Contributed to improving accessibility and usability outcomes through clearer frontend structure, improved contrast and font handling, support for alt text, and layouts that were easier for screen readers to navigate
- Implemented unit, integration, and functional tests to improve quality standards and support safer, more reliable releases

Skills: Java J2EE, Spring Framework, Spring Boot, Gradle, Tomcat, JSF, JQuery, Git, SVN, automated testing, Agile

CSIRO – Java Software Engineer (2014 – 2015)

Worked on the CASDA project for the Square Kilometre Array (SKA), ensuring Australia's astronomy data pipelines were interoperable with international standards.

- Collaborated with a multi-disciplinary Agile team of scientists, developers, testers, and DevOps engineers
- Delivered solutions aligned with IVOA international standards for astronomical datasets
- Developed with Spring Java EE, Spring Boot, and PostgreSQL
- Integrated the Elastic stack (Elasticsearch, Kibana, Logstash) for logging and data ingestion
- Contributed to CI/CD with Jenkins and collaborated using Jira and Confluence

Skills: Java EE, Spring Boot, PostgreSQL, Elastic stack, Elasticsearch, Kibana, Logstash, Jenkins, Jira, Git, Confluence, Agile

Geoscience Australia – Web Developer (2014)

Worked on the Boreholes project to consolidate disparate datasets.

- Unified databases from Oracle, MS Access, and Excel into a consistent structure
- Developed AngularJS UI with a Spring Java backend to expose REST APIs
- Delivered a functional user interface for borehole data mapping and exploration

Skills: AngularJS, JQuery, HTML5, CSS3, Bootstrap, Spring Java EE, Tomcat, Oracle DB

CSIRO – Java Software Engineer (2013)

Worked on the Emergency Situational Awareness (ESA) project, improving crisis coordination systems.

- Rewrote a monolithic J2EE application into a Java EE 7 RESTful multi-tiered system
- Integrated OpenStreetMap and OpenLayers for geolocation support
- Implemented asynchronous messaging pipelines using JMS and RabbitMQ supporting event-driven system integration
- Deployed on Glassfish and JBoss Wildfly servers

Skills: Java EE 7, RESTful services, GIS, OpenStreetMap, OpenLayers, JMS, Apache MQ, Glassfish, JBoss Wildfly, Agile

Orion Health – Senior Software Engineer (2010 – 2012)

Worked on the Breast Screening product used across NZ, NSW, ACT, and Tasmania.

- Developed RESTful web applications with public-facing modules for home bookings
- Integrated with health systems to improve interoperability
- Worked in strict Agile teams with Scrum practices, Jira, and Confluence
- Delivered scalable enterprise health solutions in Java

Skills: Java J2EE, Tomcat, OSGi, Spring MVC, Stripes, JPA, YUI, MSSQL, Derby, Agile, Jira, Confluence

Boeing Defence Australia – Developer & Team Lead (1999 – 2010)

Worked in the Integrated Logistics division delivering software and data-driven publishing systems for multiple RAAF platforms, including the F-111, AP-3C Orion, AEW&C (737-based), and F/A-18 Hornets.

- Led development of publishing and logistics systems integrated with authoritative datasets including FMECA, LSA, and FRACAS, backed by large Oracle relational databases
- Designed and maintained stored analytical pipelines operating on historical aircraft health and reliability data to support long-horizon maintenance planning and fleet reliability analysis
- Worked with rule-based expert systems (Java Rules / JRules) to apply FMECA logic over structured datasets, enabling fault classification, risk assessment, and decision support for engineering teams
- Contributed to data ingestion and transformation workflows consolidating raw logistics and maintenance inputs into canonical formats for downstream analytics and publishing
- Was across the architecture and theoretical operation of emerging real-time aircraft health monitoring pipelines (critical alerts), understanding

how sensor data, thresholds, and FMECA classifications fed near-real-time decision-making systems, though not directly responsible for their implementation

- Established SGML/XML publishing pipelines aligned with S1000D and ATA 100/2100 standards to deliver compliant technical documentation at scale
- Developed a SOAP-based inventory management system, contributing to one of the organisation's early service-oriented architectures
- Introduced Agile and Test-Driven Development practices, running pilot projects that gained management buy-in and adoption across smaller teams
- Authored extensive UML and system documentation under Defence standards to ensure traceability, auditability, and compliance
- Introduced Jira as the primary issue tracker and mandated Confluence-based documentation to improve visibility across secure environments
- Mentored junior developers and coordinated resources across multiple concurrent projects, reporting progress regularly to management

Skills: Java SE, Java Swing, Perl, Python, Omnimark, Java Rules (JRules), C++, SOAP, SGML/XML, S1000D, ATA 100/2100, Oracle DB, UML, Agile, TDD, Jira, Confluence, Unix (Solaris)

Butterworths Legal Publishers – Electronic Publishing Developer (1996 – 1999)

Delivered digital legal publishing systems across web and CD-ROM formats.

- Built ETL pipelines with Omnimark, Perl, and Python to prepare structured legal content
- Developed HTML, CSS, and JavaScript content delivery for web and CD-ROM distribution
- Produced content for Folio Views and XPP publishing systems

Skills: Omnimark, Perl, Python, HTML, CSS, JavaScript, Folio Views, XPP, SGML, XML

NSW Government – Department of Business and Regional Development – Developer (1993 – 1995)

Worked as a casual developer while studying at university.

- Built MS Access and VB forms-based applications for government workflows
- Designed simple databases to improve reporting and tracking processes

Skills: MS Access, Visual Basic, SQL

Australian Defence Industries – Macintosh Applications Developer (1994)

Developed software for Defence projects while contracted as a Mac applications programmer.

- Built applications in C++ and FoxPro database
- Supported Defence requirements with small-scale utilities

Skills: C++, FoxPro, Macintosh development

Personal Projects

imap-tools — AI Email Processing and Automation Toolkit (2025 - ongoing)

Developed a set of tools for analysing and processing email workflows using IMAP, enabling automated classification, tagging and processing of incoming messages.

The project explores the use of AI-assisted workflows to triage and organise large volumes of email, supporting automation of administrative tasks and integration with external systems.

Technical aspects include:

- IMAP-based email ingestion pipelines
- automated message classification and tagging
- workflow automation based on email triggers
- experimentation with AI-assisted email processing

Small Language Model (SLM) (2024 - ongoing)

- Fine-tuned Hugging Face DistilGPT-2 on journal-style data to explore lightweight generative modelling
- Used PyTorch modules and standard training/evaluation patterns
- Used Jupyter, scikit-learn, Pandas, NumPy, and Matplotlib for data preparation and evaluation

Catalyst – AI Research and Writing Platform (2024 - ongoing)

Designed and implemented a Retrieval-Augmented Generation (RAG) system supporting long-form research and structured writing workflows.

Key components include:

- FastAPI backend services integrating multiple LLM providers
- Vector-database retrieval pipelines
- LangChain orchestration
- Document ingestion and research session management
- Astro.js static website generation for publishing essays and research output

Choose-APY — Choose Your Own Adventure AI Game for Kids (2024)

Live demo: <https://choose-apy-frontend.vercel.app/>

Experimental AI storytelling platform that generates interactive “choose your own adventure” narratives for children using large language models.

The project explores the use of AI to dynamically create branching storylines where reader choices influence the direction of the narrative, enabling personalised storytelling experiences.

Technical aspects include:

- LLM-driven narrative generation
- branching story state management
- prompt design for child-safe and age-appropriate responses
- frontend delivery of interactive story flows

Publications

SRDD — Spec-Roundtrip Driven Development Methodology (2025)

Series: <https://dev.to/bbos/srdd-part-1-of-4-the-best-ai-coding-methodology-8fe>

Developed **Spec-Roundtrip Driven Development (SRDD)**, a methodology for AI-assisted software engineering that integrates structured specifications, prompt engineering and iterative AI code generation.

The approach focuses on:

- designing software systems from formalised specifications
- generating implementations using LLMs
- validating outputs through iterative specification refinement
- improving reliability and maintainability in AI-assisted development workflows

Running 32-bit i386 applications on 64-bit ARM using Docker (2024)

<https://bbosmith.medium.com/running-32-bit-i386-applications-on-64-bit-arm-using-docker-de7a198914a2> * Written for Pennant contract * subject: Deploying 32-bit Linux Omnimark in Docker on 64-bit ARM MacOS and Windows

Custor – Customised Documents for the Web (1995)

Honours thesis exploring personalised user models for content customisation.

Link: <https://drive.google.com/open?id=1Yhvj5huCcGqF6nxYTrnb-MFDX9nBE3-R>

Education

University of Sydney – BSc (Hons) Computer Science (1995)

Honours thesis: Custor (Credit)

University of Sydney – BSc Computer Science & Pure Mathematics (1993)

Hawker College, Canberra – Year 12 Certificate (1988)

Volunteer Experience

Friends of the Earth – IT/Communications Group & Protest Organiser (2007 – 2010)

- IT and communications support for campaigns and events
- Organisation and coordination support for protests and community action activities

stepUP Foundation – Volunteer (2006 – 2007)

- Volunteer support work for community programs

Hobbies

Martial Arts and Fitness

- Tai Kwon Do, gym, fitness training

Sports and Recreation

- Swimming, walking, skiing

Dance and Music

- Dancing, music, live bands
- Guitar