

Bailey Nepe

Full Stack Software Engineer

React | Node.js | Typescript | AWS | Docker | PostgreSQL

Hamilton, NZ

New Zealand Citizen

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SUMMARY

Ex-Deputy Chief Flying Instructor turned Full-Stack Software Engineer with **3+ years of building reliable, scalable applications**. I **lead technical projects** that deliver measurable impact, from **cutting deployment times by 87 percent** to **improving API performance by 99 percent**. I **mentor junior developers**, turning them into confident contributors. I build products that solve real problems, including a **multi-tenant aviation LMS** for pilots and a construction platform that replaces paper timesheets with real-time tracking.

SKILLS

Languages & Databases: TypeScript, Node.js, SQL, PostgreSQL, MongoDB, Redis

Frontend: React, Next.js, Tailwind, MUI, Styled Components, interactive SVGs

Cloud & DevOps: AWS (ECS, S3, CloudFront, Lambda, RDS, etc), Docker, GitHub Actions, Terraform, Datadog

Practices & Testing: Agile (Scrum/Kanban), TDD, Unit & E2E testing (Vitest, Playwright)

WORK EXPERIENCE

NumberWorks'nWords - Fullstack Software Engineer, Auckland (Hybrid) MAY 2022 - PRESENT

Leading educational technology company serving 70+ franchise centres and more than 18,000 students across Australia, United Kingdom and New Zealand. Numberworks'nWords is a subsidiary of Crimson Education.

Responsibilities:

As a full-stack software engineer, I **design, build, lead and deliver production ready features** with over **80 shipped to date**. I work across the stack to implement new functionality, optimise database performance, and ensure system reliability. I **design and manage infrastructure**, develop **DevOps pipelines**, and implement **caching strategies** that keep the platform scalable and performant. I also **collaborate with stakeholders**, centre owners, and internal teams to align technical solutions with business needs and contribute to modernising and maintaining the core platform.

Technology Landscape: Node.js, TypeScript, React (Vite, TanStack Query), PostgreSQL, Redis, AWS (ECS, CloudFront, RDS, S3, Lambda), Docker, GitHub Actions, Koa.js, tRPC, WebSockets.

Highlights:

- **Led architectural overhaul** that transformed a legacy deployment process into a streamlined multi-stage Docker ECS pipeline with CloudFront and effective caching policies. Reduced release time from 40+ minutes to under 5 minutes and cut production incidents by over 95%. Facilitated team collaboration to map out system components, proposed the solution, and led the re-architecture to integrate seamlessly with existing infrastructure.
- **Spearheaded a major performance optimisation initiative**, immediately resolving server crashes within 20 minutes and ultimately reducing API latency from over 10 seconds to under 100 ms. Optimised Postgres queries on large tables (100M+ rows), added targeted indexing, data denormalization, CTE, and implemented Redis with WebSocket-driven cache invalidation. Led the entire solution from concept to full rollout, with initial stability achieved in two weeks and a complete implementation within a month.
- **Mentored and onboarded two junior developers**, guiding them through the codebase and best practices via extensive pair programming, collaborative solution design, and thorough code reviews. Ensured they became fully integrated with team standards and comfortable with end-to-end project workflows, effectively closing any skill gaps and boosting their productivity.
- **Collaboratively increased parent engagement by 60%** by co-developing an automated notification system with a teammate. I handled the educational system side, designing real-time milestone alerts through AWS SNS, while my colleague worked on the parent portal enhancements. Together, we reduced manual workload for managers by over 12 hours per week and provided parents with personalised updates and photos via AWS S3.
- **Delivered presentations at a 100-person in person conference for centre owners and managers** in Christchurch, covering recent dev team updates and new features. On the first day, led an hour workshop segment detailing all newly deployed features, how to use them, and the reasons behind their implementation. On the following day, co-presented a session about the new notifications feature, generating excitement and buy-in by demonstrating how it could enhance parent engagement for their centres.
- **Significantly boosted front-end performance** by introducing list virtualization for large student and session lists, which eliminated rendering bottlenecks and drastically improved render times. By championing the adoption of virtualization, I enhanced the user experience so that only visible items rendered, resulting in a much smoother interface.
- **Developed and launched over 10 interactive educational activities** on the front end, ranging from clickable SVG-based “I-spy” games to AI-assisted essay feedback tools. Created features like an AI highlighter for improving student writing, dynamic AI marking for personalized feedback, and speed typing challenges. These activities not only engaged students but also provided in-depth progress reports for managers and parents, enhancing the overall learning experience.
- **Owned the full-stack delivery of an onboarding platform**, expanding it from about 15,000 lines of code to over 60,000 while refining requirements and improving reliability. Took over the project after the original developer left, implemented role-based access control, integrated Google APIs for user management, and deployed a fully functional system monitoring centre server health and onboarding new users seamlessly. Delivered the entire solution front-to-back within three months.

Career Gap

FEBRUARY 2020 - MAY 2022

Intended Second Officer start with Cathay Pacific (Hong Kong) was cancelled due to COVID-19 and family circumstances; retrained in software via full-time study at Developers Institute, completing the final year while working full-time at NumberWorks'nWords.

Waikato Aviation - Deputy Chief Flying Instructor, Hamilton NZ

OCTOBER 2016 - FEBRUARY 2020

Scaled people development, quality systems, and audit-ready workflows in a 90-year old flight-training organisation. **Led 15+ instructors, managed 70+ students**, standardised curriculum and QA assets, and drove continuous feedback loops, raising on-time completions from ~70% to 98%, doubling test readiness, and cutting ~10 remedial hours on average.

PRODUCTS LAUNCHED

Outside of work, you'll find me building and shipping real-world products like these:

Pilot Prep - Learning Management System (LMS) - In progress

pilotprep.co.nz

Founder/engineer of Pilot Prep, built after watching NZ trainee pilots rote-learn textbooks instead of understanding the content. I'm creating an immersive, interactive, community-centred LMS that turns knowledge into cockpit-ready judgment. Built using React+TypeScript (TanStack Router, React Query), a type-safe Node.js/tRPC + Prisma backend with a PostgreSQL database. Deployed using **Terraform** on **AWS CloudFront/S3** for global delivery. In the past year I've shipped **100k+ lines of code** with **15k+ lines of tests**, estimated release date of January 2026.

Highlights:

- The platform uses a **multi-tenant, white-label** architecture with organisation branding and **role-based views**. **Multi-stage Docker images** with **auto scaling for reliable performance**.
- **Security** is built in through custom **authentication and authorization**. Short-lived **JWT access tokens** are paired with **HTTP-only signed refresh cookies** for long-term sessions. Passwords are **hashed and salted with argon2**, endpoints are protected with **Redis rate limiting**, and CORS is restricted to approved domains. Role-based access control is enforced on the frontend and backend, **Google OAuth 2.0** is available for single-click sign in, **multi-factor authentication** is delivered via email using **AWS SES**, and sign in locations and devices are logged for account safety.
- The media library lets content developers upload and organise images, videos, and PDFs in a file tree system. Uploads go directly from the browser to **S3 using signed URLs** with visible progress. Images are processed into **WebP and compressed using sharp** with **multiple responsive sizes** so the client receives an appropriate asset for the current viewport. Delivery uses **CloudFront and browser caching** to keep pages fast worldwide.
- Frontend performance focuses on fast first paint and smooth navigation. The app uses route level and application level **code splitting, lazy loading**, and targeted **prefetching** with React Query and TanStack Router to reduce blocking states. **Server driven cursor pagination** and **debounced search** keep large data views responsive. **Reduced bundle sizes** and improved load times.

- Lessons are rendered by a **custom Markdown to React compiler** that loads only the components needed for a given page. Students interact with **drag and drop SVG activities**, matching exercises, multiple choice questions, and **particle based simulations**. **Real time collaboration** is built into each lesson through chat over **WebSockets**, and an **AI api** is utilised as a study assistant using lesson context to provide helpful guidance.

Dreams Built - Construction & Timesheet Management Platform

dreamsbuilt.co.nz | [github](#)

I shipped **15k+ lines of code in 2 months** to build this after watching my dad spend Wednesdays driving across Hamilton to collect muddy paper timesheets and countless nights piecing costs together. I turned that grind into a responsive web app that gave him real time visibility into job profitability and timesheet management.

Technology: React, TRPC, Express, Bun, Typescript, Auth0, React Query, Docker, Prisma, PostgreSQL

Highlights:

- **Digital timesheets.** Replaced paper with a mobile optimised app for field crews, added job selection and real time validation for hours and job codes, and automated labour cost calculation from employee rates. Saved 8+ hours each week, removed all entry errors, and enabled same day payroll.
- **Scheduling and coordination.** Delivered a central calendar with job visibility and role aware access. Reduced coordination calls and improved site readiness.
- **Delivery and reliability.** Shipped an MVP then a full redesign. v1 used React, Node, Express, **Redux, MongoDB, Auth0** on **AWS Elastic Beanstalk**. v2 used TypeScript, tRPC, PostgreSQL, Docker on Railway with automated database backups.

CERTIFICATIONS

AWS: Certified Developer - Associate (in progress, ETC November 2025)

Udemy: [Backend MasterClass\[Golang + Postgres + Kubernetes + gRPC\]](#) (in progress, ETC September 2025)

EDUCATION

Level 6 Diploma in Software Development (Grade: A+)

2021 - 2022

Developers Institute, *Whangarei New Zealand*

Level 6 Diploma in Aviation

2015 - 2016

Waikato Aviation, *Hamilton New Zealand*

HOBBIES AND INTERESTS

- **Continuous Learning:** Exploring Go, studying system design, and learning new technology.
- **Tutoring:** Tutoring pilots by simplifying complex aviation concepts.
- **Family Adventures:** Enjoying nature and outdoor activities with wife and children.
- **BBQ Smoker:** From low and slow 12+ hour briskets to whole eye fillets.