Bin **Hu**

SENIOR SOFTWARE ENGINEER

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"Be the change that you want to see in the world."

Sum**mary**

Senior Software Engineer with many years of hands-on experience across full-stack development, cloud infrastructure, and system integration. I specialize in building robust, scalable applications and automating deployment pipelines using modern DevOps tools and practices. A long-time Vim enthusiast, I enjoy working in terminal-based environments and continuously refine my toolchain to boost efficiency and focus.

I'm passionate about solving complex technical challenges and constantly exploring new technologies and development techniques. While my primary focus remains software engineering, I'm increasingly contributing to architectural discussions and system design, aiming to grow into broader technical leadership over time.

Ski**lls**

Back-end	GraphQL, Express, REST API, Serverless, EntityFramework, SQL, Non-SQL (DynamoDB)
Front-end	Next.js, React, Material UI, CSS
DevOps	GitHub Actions, AWS CDK, Docker, Terraform, Jenkins
Programming Languages	C#, TypeScript, Python, Go, Rust, C, Julia
Azure	App Service, Container Apps, Functions, App Gateway, App Insights, APIM, Entra ID (formerly Azure AD)
AWS	EC2, S3, RDS, Lambda, API Gateway, CloudFront, Elemental, DynamoDB, ECR, ECS, Fargate
Tools	Git, Neovim/Vim, Visual Studio, VSCode, Unity Editor
Methodology	Agile, Object-Oriented/Functional Programming, CI/CD, Unit testing for all languages
CMS	Contentful, Sitecore
AI & Machine Learning	Prompt Engineering, Large Language Models (LLMs), Generative AI (ChatGPT, Claude AI, Gemini)
Languages	English, Mandarin

Edu**cation**

UNSW (The University of New South Wales)   *Sydney, NSW, Australia*

BACHELOR OF ENGINEERING (HONOURS) (SOFTWARE)   *February 2002 - Decemeber 2005*

- Achieved Honours Class 2 Division 2.

Wor**k Experience**

RACWA   *Perth, WA, Australia*

SENIOR SOFTWARE ENGINEER   *April 2022 - Present*

- Spearheaded the development of a new self-service capability within the myRAC portal, allowing members to instantly manage their Roadside Assistance cover online. This initiative automated **3,700 annual member requests, directly improving operational efficiency** and member satisfaction.
- **Engineered a high-adoption digital membership card feature, achieving a 96% member uptake rate within three months of launch.** Led the end-to-end development, including threat modelling and security architecture, to allow members to securely add their RAC card to their digital wallets.
- **Led the strategic replacement of the RAC website's Azure Search with a vendor-hosted Solr solution.** This migration significantly enhanced search performance and speed (cutting the search time by half), improving content discoverability and the overall user experience on the main site.
- **Drove the evolution of the myRAC digital platform through a major re-platforming and redesign.** Led the technical migration of the Next.js front-end, GraphQL layer, and back-end services into a unified monorepo, while simultaneously implementing a complete UX redesign with new navigation and back-end integrations.
- **Enhanced the Autoservice booking platform by leading the integration of a third-party vehicle registration look-up service.** This involved full-stack development of front-end workflows and back-end APIs to streamline the booking process and reduce data entry, resulting in **a significant reduction in member drop-off rates during the journey.**

Fugro Marine Australia   *Perth, WA, Australia*

Senior Innovation Engineer (Promoted from Software Engineer)   *June 2006 - March 2022*

- **Architected and delivered a low-latency (6s) real-time video streaming platform** for remote ROV seabed pipeline inspections, leveraging **AWS Elemental (MediaLive, MediaStore), CloudFront (signed cookies), React/Material UI, and a TypeScript/DynamoDB user management backend**. Spearheaded CI/CD automation via AWS CDK.
    - Engineered the complete user experience, developing the video streaming front-end (React, Material UI) and a full-stack administration system for client channel and user management.
    - Architected the core cloud infrastructure using AWS Elemental MediaLive and built a fully automated CI/CD deployment pipeline with AWS CDK, ensuring scalable and reliable delivery.
- **Cloud & Full-Stack Development:** Architected and deployed a variety of scalable systems on AWS, including a data exchange for Uncrewed Surface Vessels (USVs) and a marine vessel reporting website. Leveraged a broad range of technologies including .NET Core, TypeScript, Docker, and AWS services (Lambda, ECS/Fargate, S3, DynamoDB).
- **DevOps & Infrastructure Automation:** Established and maintained robust CI/CD pipelines across multiple projects using Jenkins and GitHub Actions. Championed Infrastructure as Code (IaC) with Terraform and CloudFormation to ensure rapid, reliable, and repeatable deployments.
- **Data Processing & Machine Learning:** Contributed to a cloud-hosted Machine Learning system for the automated classification of multibeam sonar data. Streamlined and automated complex data processing workflows for vessel-based pipe inspections, significantly reducing manual effort.
- **System Modernisation & Core Systems:** Led a team in refactoring monolithic applications into a Service-Oriented Architecture (SOA), enhancing scalability. Architected and maintained core modules for Fugro's next-generation global data acquisition software suite using .NET and WPF.
- **Foundational Engineering:** Built a strong career foundation as a junior engineer, contributing to all the aspects of the in-house survey software suite, including data acquisition, processing, and visualisation using C++, MFC, and C#.

Presentation _____

RACWA (Internal)   *Perth, WA, Australia*

Threat Modelling for Digital Membership Card   *October 2024*

- Presented on the threat modeling process for the digital membership card initiative to a wide internal group, ensuring robust security architecture for the feature's high adoption.

Fugro Innovators Conference   *Perth, WA, Australia*

Secure and Scalable Video Streaming Solution using AWS Elemental   *October 2020*

- Presented a comprehensive analysis of challenges in live-streaming remote operational data.
- Architected a solution using AWS Elemental Media Services to achieve secure, scalable, low-latency streaming.
- Delivered a live technical demonstration on configuring the end-to-end streaming workflow.
- Detailed advanced security protocols, including the implementation of AWS CloudFront signed URLs and cookies to protect content.