

# Bin Hu

SENIOR SOFTWARE ENGINEER

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

## Summary

Senior Software Engineer with over 18 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.

## Skills

<b>Back-end</b>	GraphQL, Express, REST API, Serverless, EntityFramework, SQL, Non-SQL (DynamoDB)
<b>Front-end</b>	Next.js, React, Material UI, CSS
<b>DevOps</b>	GitHub Actions, AWS CDK, Docker, Terraform, Jenkins
<b>Programming Languages</b>	C#, TypeScript, Python, Go, Rust, C, Julia
<b>Cloud - Azure</b>	App Service, Container Apps, Functions, App Gateway, App Insights, APIM, AD (Entra ID)
<b>Cloud - AWS</b>	EC2, S3, RDS, Lambda, API Gateway, CloudFront, Elemental, DynamoDB, ECR, ECS, Fargate
<b>Tools</b>	Git, Neovim/Vim, Visual Studio, VSCode, Unity Editor
<b>Methodology</b>	Agile, Object-Oriented/Functional Programming, CI/CD, Unit testing for all languages
<b>Languages</b>	English, Mandarin

## Education

### UNSW(The University of New South Wales)

B.E. IN SOFTWARE ENGINEERING

- Achieved Honours Class 2 Division 2.

*Sydney, NSW, Australia*

*Feb. 2002 - Dec. 2005*

## Work Experience

### RACWA

SENIOR SOFTWARE ENGINEER

*Perth, WA, Australia*

*April 2022 - Present*

- 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 aspects of the in-house survey software suite, including data acquisition, processing, and visualisation using C++, MFC, and C#.

## 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.
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## Presentation

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### Fugro Innovators Conference

Perth, WA, Australia

SECURE AND SCALABLE VIDEO STREAMING SOLUTION USING AWS ELEMENTAL

Oct. 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.