William Gan HanSong

Recent Graduate - Former Software Engineer - AWS Certified Solutions Architect

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Profile Summary

- **Recent Graduate** with **BSc in Information Technology**, achieving a **First Class Honours**.
- **Former Software Engineer** with a proven ability in **application development, troubleshooting**, and understanding of software and system architectures.
- Proficient in designing **scalable cloud architectures** and automating **cloud provisioning** using **Terraform (Infrastructure as Code)**, enabling robustness, operational and cost efficiency.

Cloud Projects

Scalable 3-Tier System with CI/CD Pipelines on AWS

- **Architected and implemented** a highly available **3-tier system** using **AWS services** like **IAM Roles, Security Groups, Route 53, EC2, Launch Templates (Bash), ALB, ASG, ACM, CloudFront, S3,** and **Secrets Manager**.
- **Automated Build and Deployment** by establishing **CI/CD Pipelines** using **AWS Connector for GitHub, AWS CodePipeline, AWS CodeBuild, AWS CodeDeploy**, and writing **AppSpec.yml** scripts.
- **Automated infrastructure provisioning** using **Terraform (Infrastructure as Code)**, improving **time efficiency by 90%** and **ensuring reproducibility** across different environments.

Work Experience

NCS Group – Software Engineer (Left role to pursue degree)   *Aug 2021 – Oct 2022*

- Optimized and upgraded **python-based data processing pipelines**, improving job execution time by 20%.
- Monitored **system logs via Azure Monitor** to **troubleshoot, resolve errors** and **ensure stability**.
- Wrote **SQL queries** to fulfill data extraction/reporting requests from stakeholders using **Microsoft SQL Server.**
- **Remediate OWASP vulnerabilities** by **patching dependencies** across internal microservices.

Inventory Specialist (Data) @ Aftershock PC   *Jul 2020 – Jun 2021*

- **Automated Workflows** in Google Sheets through **Apps Scripts, Conditional Formatting Algorithms**, and **Pivot Tables**.
- Developed an **Inventory Monitoring Dashboard** for **Trend Analysis** such as forecasting future inventory needs.

Education

- **BSc in Information Technology, First Class Honours** – Teesside University   **Grade Awarded in <u>Feb 2025</u>**
- **Diploma in Electrical and Electronics Engineering** – Republic Polytechnic   Completed in May 2018

Notable Certifications

- **IBM Applied DevOps Engineer** – Issued by **IBM** (IBM Cloud, **Kubernetes**, CI/CD)   <u>**Work in Progress**</u>
- **[AWS Solutions Architect Associate](#)** – Issued by **AWS** (AWS Cloud, System Architecture)   **Acquired in May 2024**
- [Google Data Analytics Professional](#) – Issued by **Google** (SQL, R Programming, Tableau)   Acquired in Jun 2021
- [Meta Front-End Developer Professional](#) – Issued by **Meta** (JS, React, UI/UX)   Acquired in Aug 2023

Technical Skills

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Development:	ReactJS, Redux, Node.js, Express.js, MongoDB (NoSQL), JWT Auth
Languages:	JavaScript (ES6), Python, HCL, PowerShell, YAML, Bash, JSON, SQL
Tools:	AWS, OpenShift, Kubernetes, Docker, VMWare, NGINX, Terraform, Postman, Git/GitHub
Relevant Concepts:	Containerization, Orchestration, Auto-Scaling, Load Balancing, Reverse Proxy, Infrastructure as Code (IaC), Scripting, CI/CD Pipelines, DNS Management, Secrets Management, IAM, ITIL v3, Prince2 PM, ISO 27K.

Scalable 3-Tier System with CI/CD Pipelines on AWS
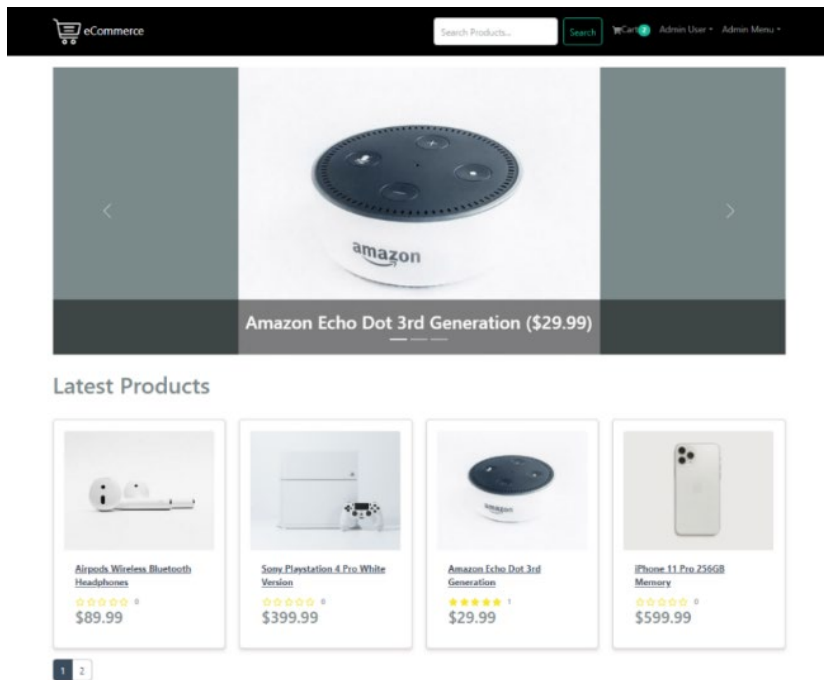
Application Features & Design

- *User Authentication & Authorization*
- *Cart and Checkout System*
- *Payment Gateway Integration*
- *Managing Listings and Orders*
- *Account Management Tools*

Frontend: Designed and implemented the user interface using React.js, styled with Bootstrap and manage state using Redux.

Backend: Developed APIs using Node.js and Express.js, secured with JWT-based authentication.

Technologies: React.js, Redux, Node.js, Express.js, Bootstrap, JWT Authentication, MongoDB, Cloudinary API.

Designed by Gan Hansong
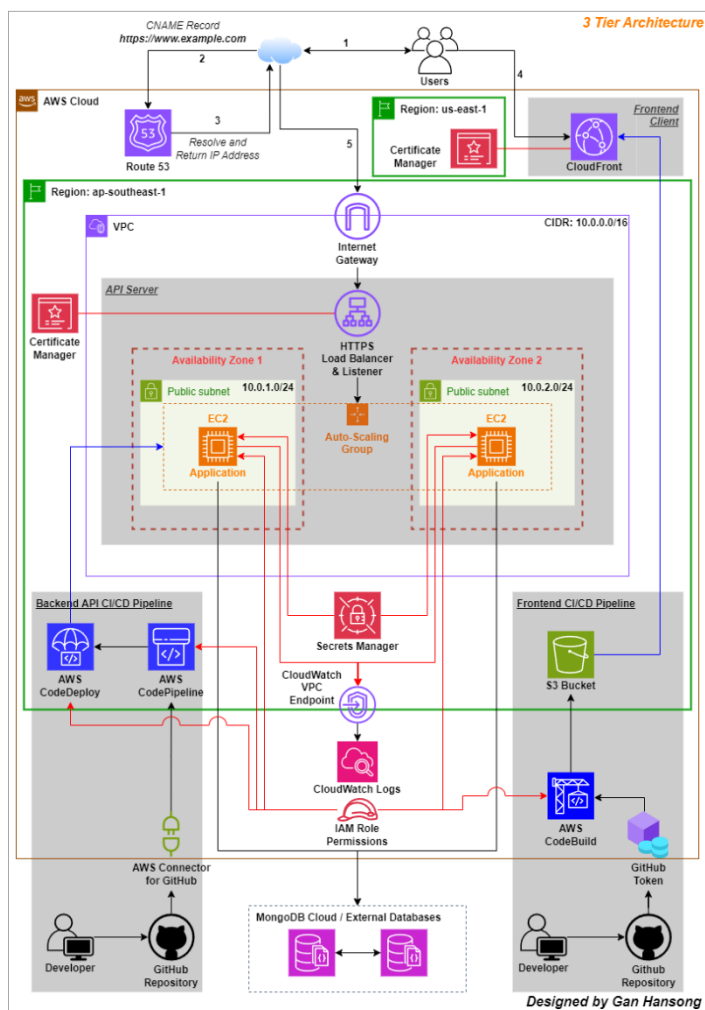
Cloud Architecture Design

The application is deployed in **a scalable and high-availability** system leveraging **AWS** Cloud services and **Terraform (Infrastructure as Code)** tool.

Frontend Application: Hosted static assets on S3 with global distribution through CloudFront (CDN).

Frontend CI/CD Pipeline: Used AWS CodeBuild to detect changes from GitHub, pull the repository and build, and store in S3 bucket.

Backend Application: Used EC2 instances in Auto Scaling Groups behind a Load Balancer for scalability.

Backend CI/CD Pipeline: CodePipeline to detect changes on GitHub, trigger CodeDeploy to release new versions onto EC2 instances in the Auto Scaling Group with zero downtime using Blue/Green Deployment.

Services Used: Route 53, Certificate Manager, Secrets Manager, IAM, S3, CloudFront, CloudWatch Logs, VPC, IGW, Subnets, Route Tables, EC2, Load Balancer, Target Groups, Auto Scaling Groups, CodeBuild, CodePipeline, CodeDeploy**.**

Frontend: https://github.com/hswg94/ecomm-react-frontend
Backend: https://github.com/hswg94/ecomm-express-api/
Terraform (IaC): https://github.com/hswg94/ecomm-terraform
Live Demo: https://ecomm.hswg94.com