Gao Zhiyuan

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Work Experiences

Amazon Web Services
Associate Solutions Architect *Jun. 2024 - now*

1. Global Network Infrastructure Optimization Project
- Monitored and analyzed network latency between the USA and Singapore, identifying bottlenecks within individual CloudFront components causing TCP reconnections.
- Developed and implemented a PoP warm-up strategy and an NGINX-based solution to ensure persistent TCP connections.
- Reduced cross-region latency inconsistency from 60% to under 10%.

2. RAG-based Chatbot for AWS Knowledge
- A chatbot using Retrieval Augmented Generation, to answer technical questions specifically focused on AWS services
- Evaluate the responses in terms of hallucination, self-knowledge dependence, Context Utilization and etc.
- The tech stack includes AWS Lambda, RDS, Opensearch, Bedrock/Claude, Sagemaker, Rerank.

3. Multimodal Content Guardrailing
- Employed a model unlearning project to f̈orget c̈ertain concepts during inference time
- Moderate Content through AWS Nova, Bedrock Guardrails, and the model unlearning project

4. Client Security Incident Response
- Managed customer security incidents through advanced attack behavior analysis, device fingerprint profiling, and cloud attack path mapping.
- Enhanced client cloud security by designing and implementing robust security architectures and strategies.

Trilogy
Software Engineer *Aug. 2022 - Aug. 2023*

1. AWS Cost Optimization project
- Lowered AWS Service Costsfrom 25 million USD annually down to 5 million USD in a team of 3.
- Designed non-intrusive, sustainable plans to guarantee resource sharing, user resource awareness, automated anomaly detection and permission rules.

2. Social Platform for Education
A social platform that enables 4-12 grade students to memorize curricular knowledge through making posts with the help of AI and memorization techniques.
The tech stack includes Next.js, Prisma/MySQL, GPT-3, Stable-Diffusion, Docker and AWS Devops.

3. Data Platform based on Azure AD
Construct a graph-based data platform and use it to calculate company employee interaction intensity. Extract data from MS 365 through Azure Graph API, engineer the data into graph relationships and

maintain the in the graph database.

4. Automate Company ERP operations on NetSuite
In charge of project ideation, development and delivery and was solely responsible for communication with the clients. Tech stack involves Selenium, Chrome Plugin, Python and Javascript

MISE
Devops Engineer *Jun. 2022 - Sep. 2022*
Addressed latency spikes in an AWS Lambda-based startup application during peak traffic hours.
Diagnosed and resolved performance bottlenecks by analyzing AWS Lambda, API Gateway, and MySQL RDS.
Streamlined deployment processes using Terraform Infrastructure as Code (IaC).

Projects

Seoul National University City Energy Lab
Research Intern *Sep. 2023 - Now.*
RAG-based Chatbot for Urban Planning
- Built a RAG chatbot with FAISS, parent-child chunking, keyword-extration for domain-specific knowledge
- Designed a chatbot with NextJS, Typescript, Prisma, FAISS and OpenAI API

Seoul National University 2019
Project Name: Accomodate Input Spikes with AWS Lambda Functions
A hyrbid system of Dockers and AWS Lambda Functions, where stable workloads are running on docker and input rate spikes are offloaded to AWS Lambda Functions,
Implemented job scheduling/balancing algorithm to coordinate Lambda Functions' life cycle, data relay, and system-level dynamic scaling

Google Summer of Code
Apache Foundation *2019*
Engineered Apache Nemo to process single-stage batch data with AWS Lambda Functions

Chinese Academy of Science PLCT Lab
QEMU Researcher *2020*
One patch to QEMU upstream to emulate Nuclei RISC-V SoCs with customised interrupt controllers and registers,
Delivered an oral presentation at CRVA 2020

Education

National Cheng Kung University Taiwan
B.S., Political Science *Sep. 2015 - May. 2017*
Seoul National University Korea
B.S., Computer Science and Engineering *Sep. 2019 - Aug. 2024*

Skills: Languages: Python, Java, Typescript, C/C++, NextJS
DevOps: AWS, Redis, K8S, Docker
Others: AI Agent / RAG development, Serverless development, QEMU, React, Selenium

Languages: Chinese, English (TOEFL 100), Japanese (JLPT N1) and Korean