Internship Results Presentation-

QNAP

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Background

- **Department:**

  Software R&D Department 1, Cloud and Data Management R&D Division

- **Position:**

  R&D Intern

- **Academic Background**:

BS of Civil engineering	National Cheng Kung University	[2018-2022]
MS of Computer Science	National Tsing Hua University	[2022-2025]
MS of Data Science	University of Michigan- Ann Arbor	[2025-]

Projects

Device Avatar	Migrated device avatar APIs (upload, delete, retrieve) from Python to Go to improve performance and maintainability
	Implemented token-based authentication using the ACC token info API to secure all endpoints.
	Developed unit tests for each API to ensure reliability.
	Deployed the Device Avatar service on Kubernetes
Couchbase and Mongodb Benchmark Test	Contributed to benchmark tests comparing the performance, efficiency, and stability of Couchbase and MongoDB.
	Analyzed database performance on object upload and listing operations within complex hierarchical data structures.
Konnyaku	Migrated Konnyaku, the website for managing string translation for products, from python2 to python3 and deploy on kubernetes

Tasks

DDNS-Worker	Diagnosed and resolved a critical issue where the DDNS Worker failed during RabbitMQ pod scaling events, ensuring service stability and uptime.
Memory Leak	Identified and pinpointed the source of a memory leak by analyzing performance metrics in Grafana and conducting a thorough code trace of the affected service.
NATS	Troubleshot an unexpected connection issue by analyzing logs from NATS server and message producer pods, successfully identifying the root cause of spontaneously drain triggered by NATS itself.

Jira Issue Search APIs

- **Developed a semantic search service to enhance Jira issue query efficiency and relevance**

  - Implemented this by generating text embeddings for Jira issues and storing them in a ChromaDB vector database.

- **Integrated the AWS Bedrock LLM API to automatically generate resolution suggestions for Jira issues**

  - Utilized prompt engineering to produce well-structured and contextually relevant guidance from the LLM

Jira Search IDE Integration (MCP)

- **Objective:**

  Developed a Model Context Protocol (MCP) to integrate the Jira Issue Search service directly into an engineer's IDE, aiming to streamline developer workflows.

- **User Interface:**

  Implemented a chatbox interface that allows developers to query Jira issues using natural language and time-based filters without context-switching.

- **Key Innovation:**

  Enabled search results to be passed directly to in-IDE LLMs (like GitHub Copilot or Claude) for instant analysis and automated resolution suggestions.

Key Takeaways & Skills

- **Backend & DevOps Engineering**

  Learned end-to-end backend workflows, from containerizing applications with Docker to deploying and managing services on Kubernetes using GitLab CI/CD pipelines.

- **Database & Systems Knowledge**

  Experienced with NoSQL databases (MongoDB, Couchbase) and network architecture.

- **Agile Project Management**

  Practiced Agile development with Jira for sprint and task tracking.

- **Technology Stack**

  Platforms & Tools: Docker, Kubernetes, GitLab, Grafana, Jira

Thank You