

TECH EXPERIENCE

Open Source Backend Engineer

Mercuries Life Insurance 2024/3~Present

Backend Development

Languages

Java 8 11 17 21 Python 3 Node.js

- *Implemented factory design pattern for decoupling - <https://github.com/Vinskao?tab=repositories>*

Frameworks & Libraries

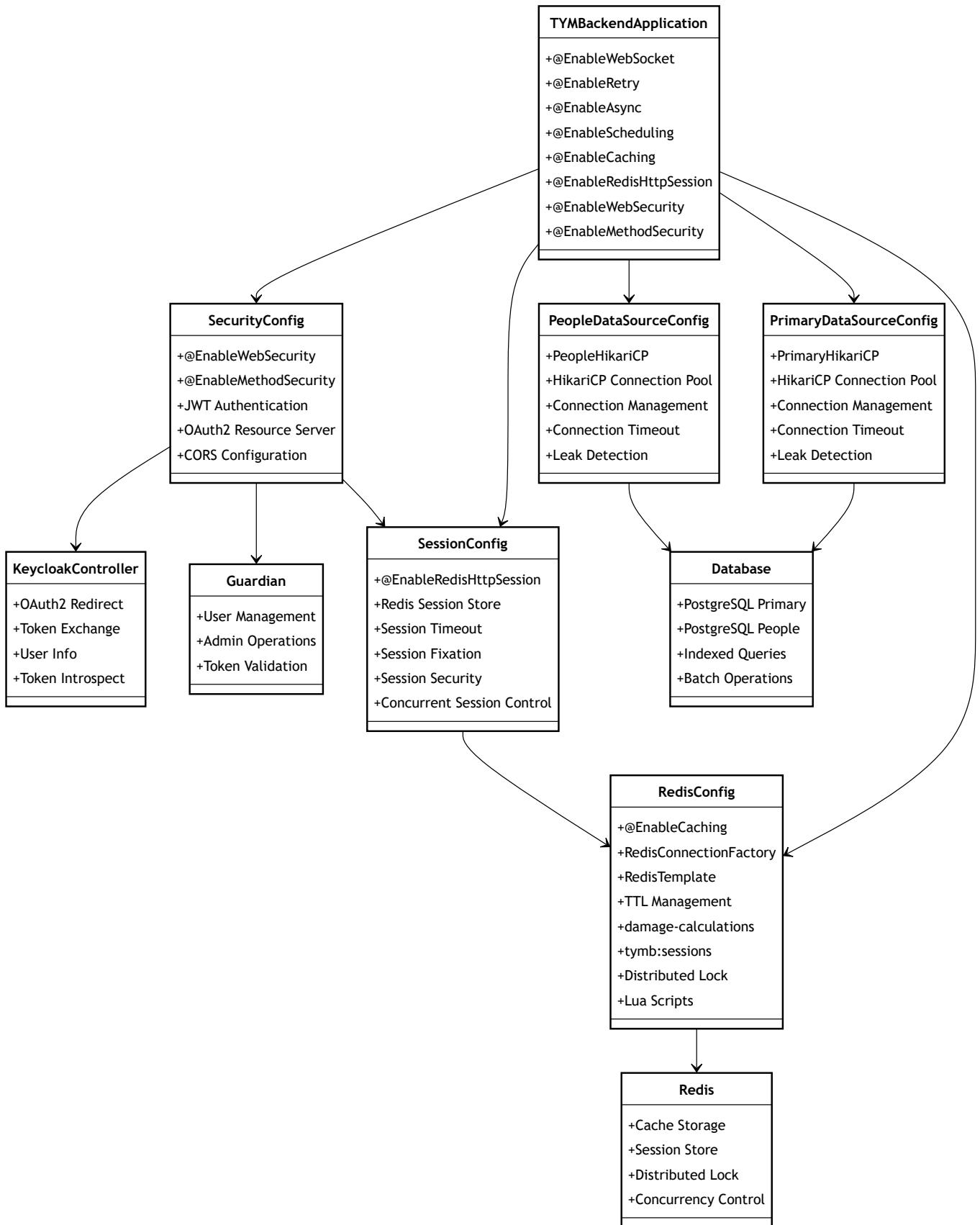
Spring Framework 6 Spring Boot 2 3 Spring Session Redis Quarkus 3 Django Rest

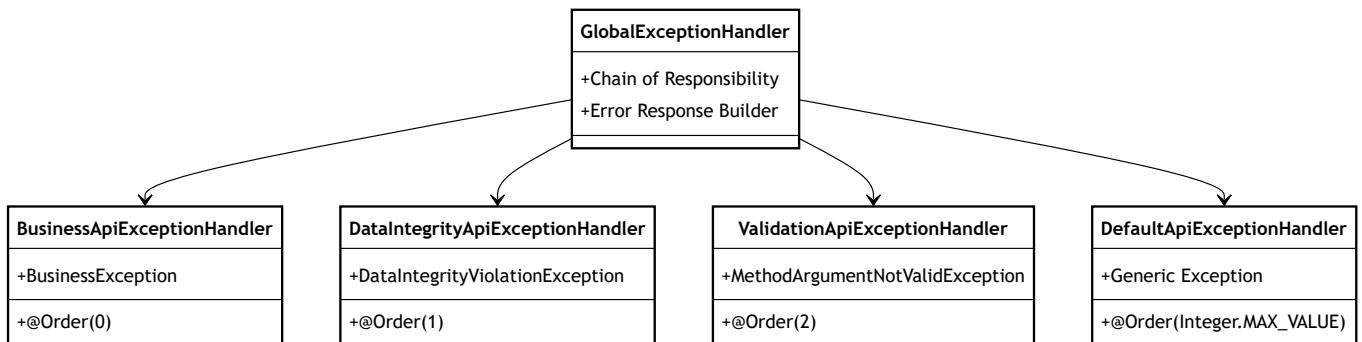
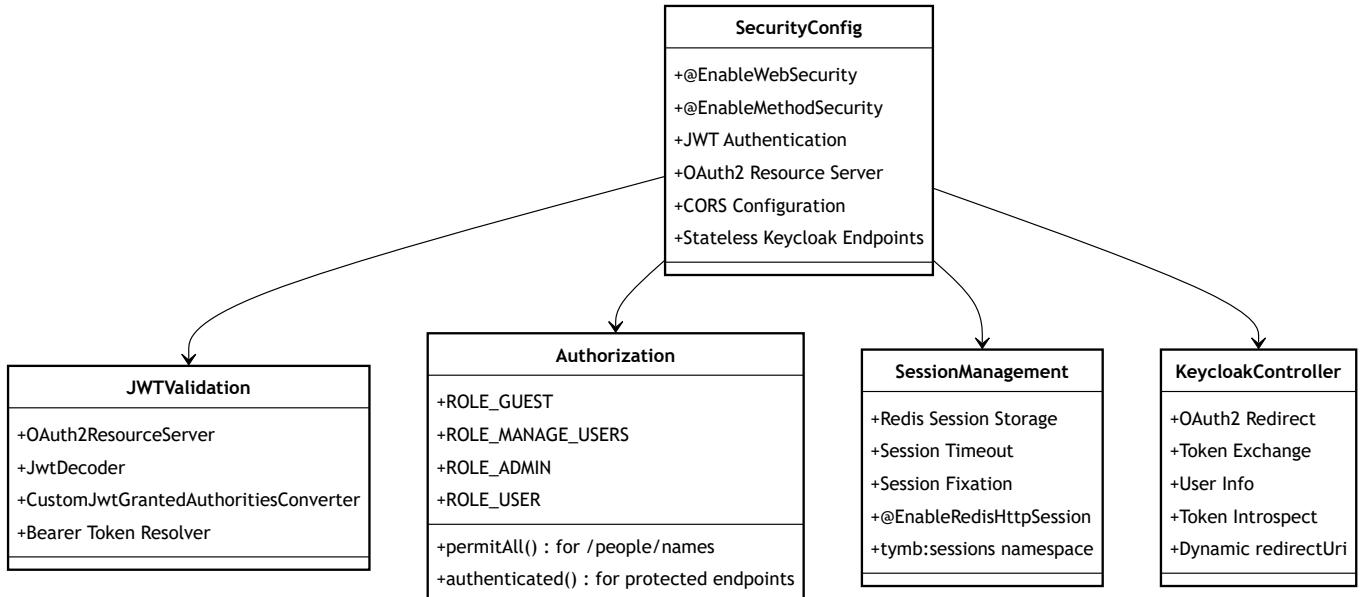
Django ASGI WSGI Worker Pattern Express.js Async/Await Event Loop ExecutorService

ConcurrentHashMap Virtual Threads ForkJoinPool Continuation Fiber @RabbitListener

VirtualThreadTaskExecutor

- *Developed CRUD APIs using Spring Boot framework with SSO server integration*
- *Implemented real-time WebSocket backend with Java ExecutorService, ConcurrentHashMap, and async tasks to handle multi-threaded message queues. Used channel-based push to deliver system metrics and order info to frontend, ensuring non-blocking processing for different data sources.*





Data Access

JPA Mybatis 3 JDBCTemplate Mongoose.js HikariCP

- Used JPA, MyBatis, and JDBCTemplate to implement data access layer across Spring Boot and legacy JBoss applications. Designed entity mappings and SQL queries for CRUD and batch operations. Used Mongoose.js for schema definition and queries in MongoDB-powered dashboards.

API Development & Testing

Swagger RESTful API JUnit 5 Mockito Servlet 5 Maven Poetry Exception Handling

Chain of Responsibility

- Designed and implemented RESTful APIs for order processing and account management using Spring MVC, FastAPI, and Laravel. Used Swagger for API documentation. Implemented unit and integration tests with JUnit 5 and Mockito, validating controller-service-repo interaction. Applied Servlet 5 filters for CORS and auth, and used Maven/Poetry for build lifecycle management.

Frontend Development

JavaScript TypeScript Vue.js 2 3 React.js React Hooks React Context jQuery AJAX
 Axios Bootstrap SweetAlert2 HTML2Canvas JSPDF Jest Astro MDX Handlebars
 Thymeleaf CKEditor 5 Webpack Bundle D3

- Built Astro website with React useState integration
- Developed Thymeleaf MVC and Handlebars CRUD APIs
- Developed Vue.js 2 3 with Vuex integration

Database

Relational

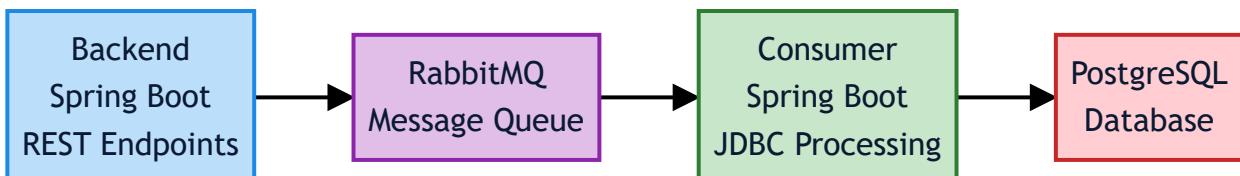
PostgreSQL PGVector pg_trgm N-Gram Index Trigram Search Fuzzy Search
 Full Text Search GIN Index Hybrid Search MSSQL SQLite MySQL Informix

- Integrated PostgreSQL with Keycloak SSO, LangChain, and multiple backend REST API frameworks
- Maintained DB Access Layer for MSSQL in JBoss EAP
- Upgraded JBoss from EAP 7 to EAP 8 and containerized JBoss 7 for 20+ servers
- Used PostgreSQL transaction blocks (with Spring @Transactional) to ensure atomic updates for order matching, record insertion, and position updates. Designed composite indexes (e.g., status + timestamp) for efficient query of latest records, and avoided unnecessary indexes to balance write performance.
- Implemented N-Gram indexing for full-text search using PostgreSQL pg_trgm extension, supporting fuzzy matching and similarity search across multiple languages. Built hybrid search systems combining N-Gram and vector search for semantic and character-level text retrieval.

NoSQL

MongoDB Firebase Redis Celery

- Deployed Redis server with producer (API server with visit count API) and consumer (deployed individually) services to record website visit counts for handling large numbers of concurrent requests
- Integrated Redis for form state management system, implementing session storage and temporary data caching with Lua scripts for atomic operations and application-level integration for data persistence and state synchronization.
- Implemented RabbitMQ-based asynchronous message processing architecture with producer-consumer pattern. Designed TYMBackendApplication as producer with AsyncMessageService and RabbitMQConfig for message publishing. Deployed RabbitMQ 4.1 Management server as message broker with queue management and async processing capabilities. Built dedicated Consumer Pod for message processing and database write operations, ensuring reliable message delivery and fault tolerance. This architecture enables scalable, decoupled communication between backend services and database operations, supporting high-throughput message processing with guaranteed delivery semantics.



Infrastructure & Deployment

Containerization & Orchestration

Docker Podman Kubernetes Bare Metal K8S OCP K8S

- Implemented PV and PVC for database data persistence

IaC & Automation

Terraform Ansible Helm YAML

- Used Terraform to provision infrastructure on OCI and configure networking, compute, and storage resources. Automated deployment with Ansible for multi-node environments. Created and templated Helm charts for application rollout and upgrade across namespaces.

Servers & Middleware

JBoss EAP 7 8 Tomcat RabbitMQ

- Set up volumes for containerized JBoss EAP 7 for real-time configuration updates
- Configured systemctl for JBoss EAP 8 and JBoss containers for auto-start on restart

System Architecture

Thread Pool

- Implemented thread pool patterns for concurrent task processing and resource management in high-performance applications.

Monitoring & Visualization

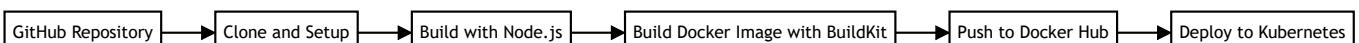
Grafana Prometheus Kiali Jolokia Instana

- Integrated Prometheus with Spring Boot Actuator for collecting JVM and custom metrics. Visualized real-time data using Grafana dashboards. Used Kiali to monitor service mesh topology and Istio routing behaviors. Monitored JBoss runtime via Jolokia and collected traces with Instana.

CI/CD

Jenkins Docker BuildKit

- Built Jenkins Server and implemented CI/CD pipelines using Jenkins and Jenkins Credentials for Spring Boot, Django, Laravel, and Astro projects



Network

Protocols

HTTP WebSocket STOMP SSL/TLS

- Built chat room and Spring Boot Actuator metrics exporter with WebSocket, using STOMP for message broker

Service Mesh & Load Balancing

Istio Ingress Nginx Ingress Controller Nginx Static File Server Public Load Balancer

NAT Gateway Egress

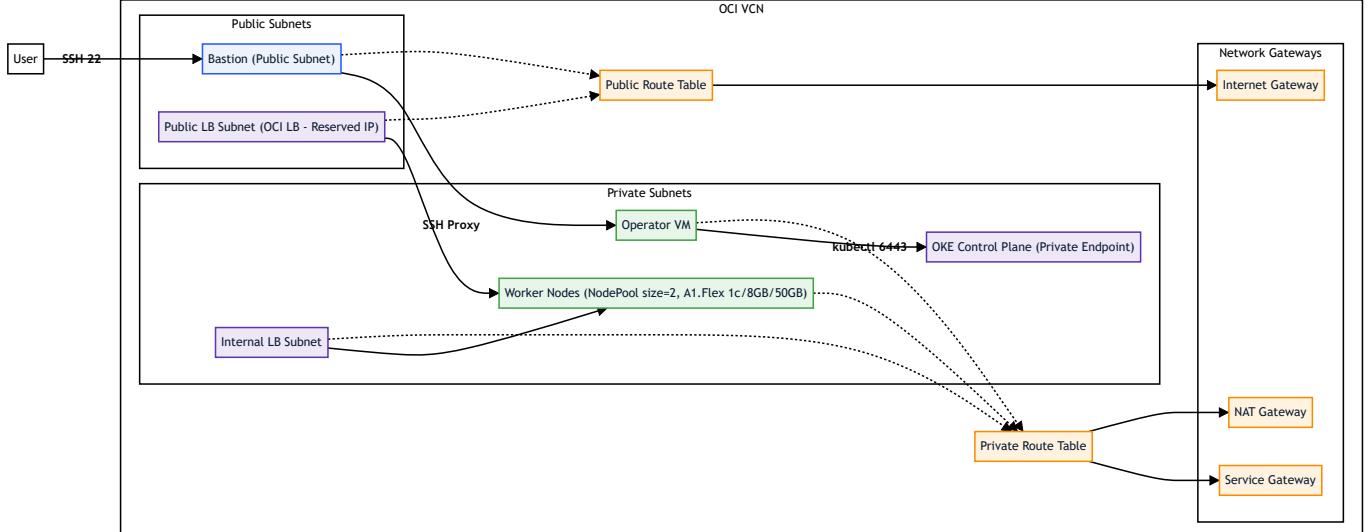
- Deployed Nginx Ingress Controller with all services exposed through ingress and cert-manager TLS, and Nginx Static File Server for serving static files.
- Configured Istio ingress gateway with routing policies and mTLS for internal services. Applied round-robin load balancing for stateless services and integrated Nginx for static assets delivery. Used cert-manager with ACME to issue and auto-renew TLS certs for ingress.

Cloud

Platforms

OCI OKE Bastion GCP

- Deployed bare-metal K8S server on OCI with public subnet and ingress configuration.
- Provisioned OKE with bastion in public subnet, operator VM in private subnets, and OKE control plane on private endpoint; configured public/internal load balancers and route tables (IGW/NAT/Service Gateway), with kubectl access via SSH proxy through bastion.



Tools

Systems

Linux RHEL 7 8 Runtime Image Ubuntu

- Upgraded RHEL from 7 to 8 for 20+ servers

Scripting

Shell Bash

- Used Bash and Shell scripts to automate backup, deployment, and log rotation for RHEL-based systems. Used Python scripts to call APIs, process logs, and integrate with third-party services for data extraction and cleanup.

Others

Cursor Yum Repository Satellite Google Apps Script

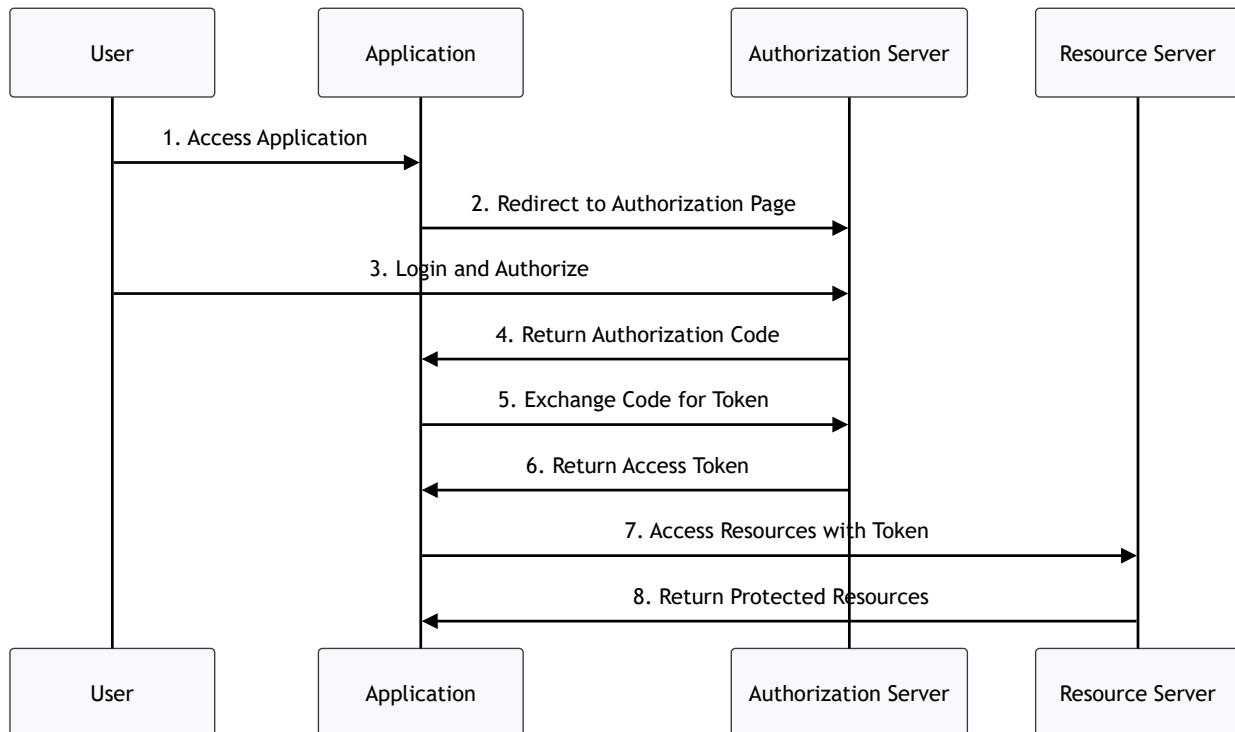
- Used Yum Repository and Satellite to get files for upgrading RHEL
- Developed WordPress plugin to crawl double-layered data in Elementor ecommerce form

Security & Authentication

Keycloak 18 26 Keycloak SPI RedHat SSO 7 Authorization Code Flow JWT Spring Security

Digital Signature OAuth2 Java Keystore

- Built Keycloak SSO server and implemented authorization code OIDC method to connect public and confidential clients - <https://github.com/Vinskao/keycloak-client-demo>
- Updated Keycloak 18 to 26 on K8S, persisted data to PostgreSQL
- Updated Keycloak SPI to Quarkus 3 from Quarkus 2, and implemented Keycloak username-password authentication flow using Informix stored procedure
- Implemented CDI to inject entity manager to DAO layer



AI

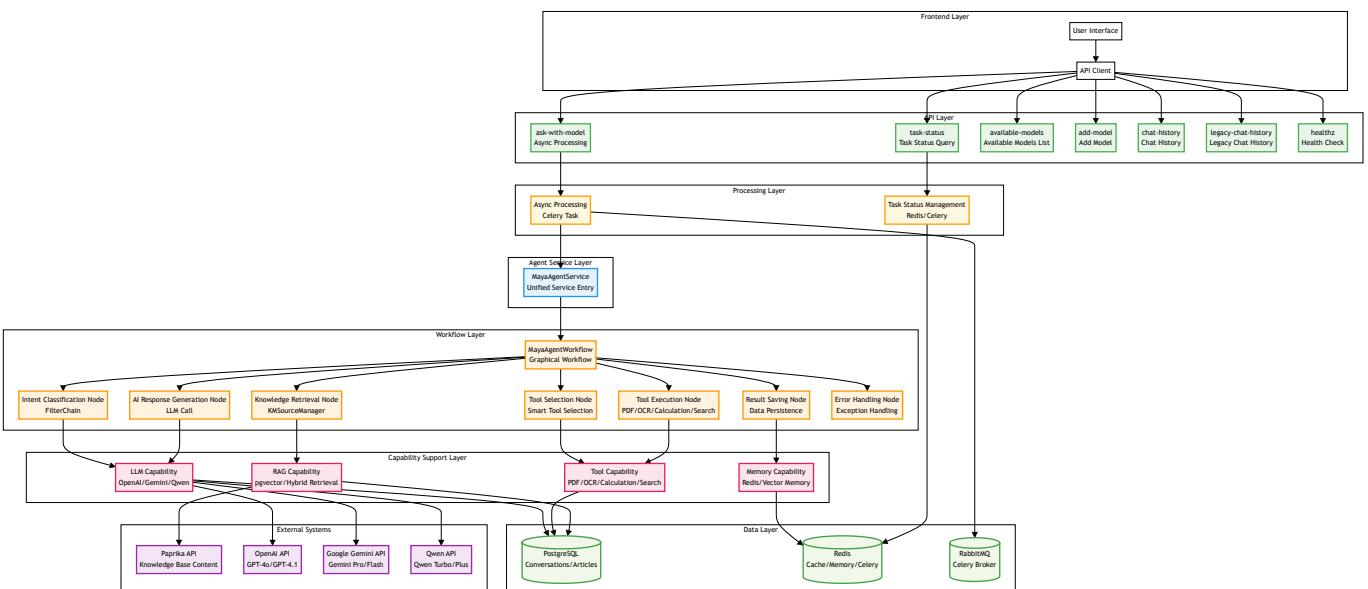
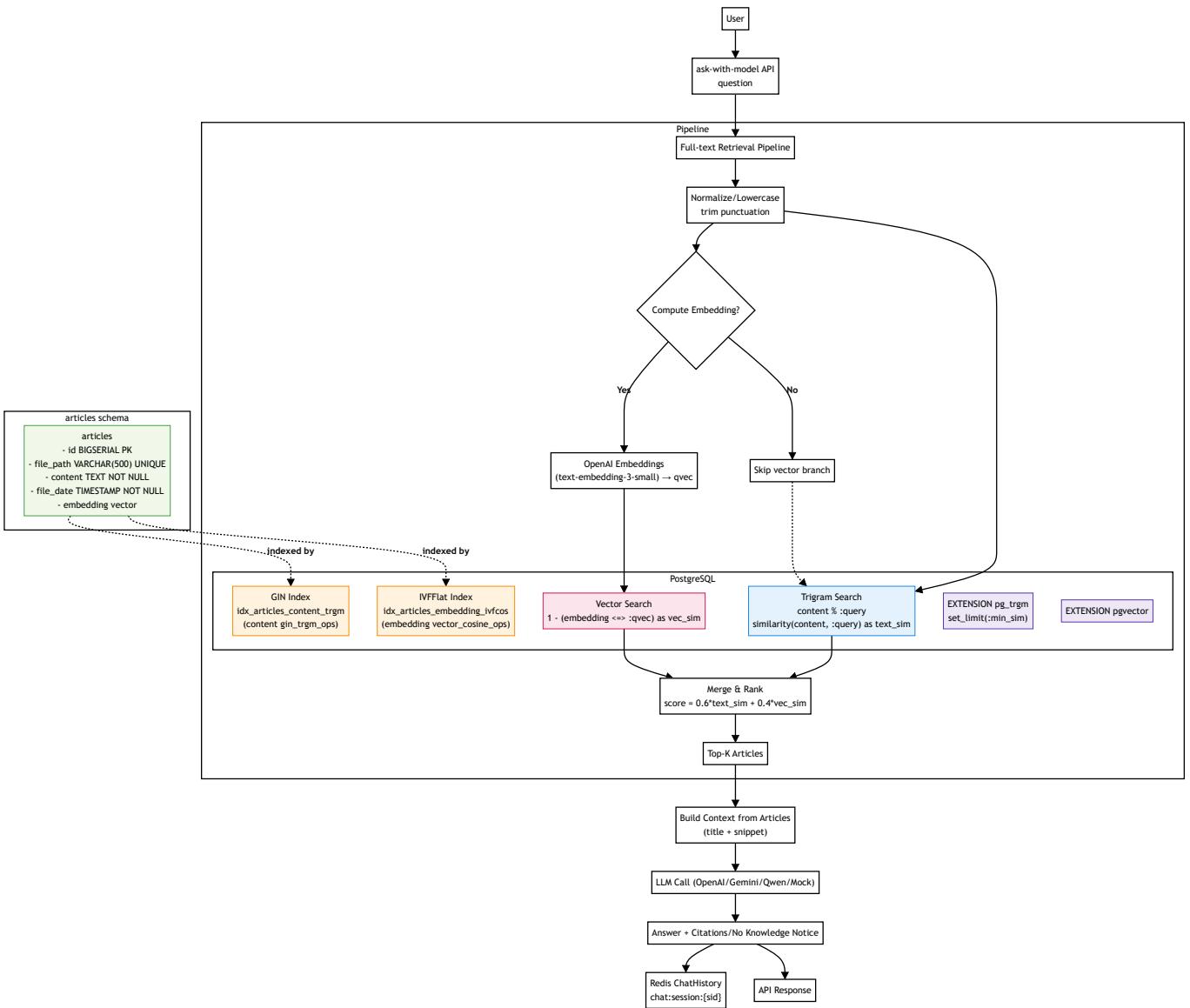
Frameworks & APIs

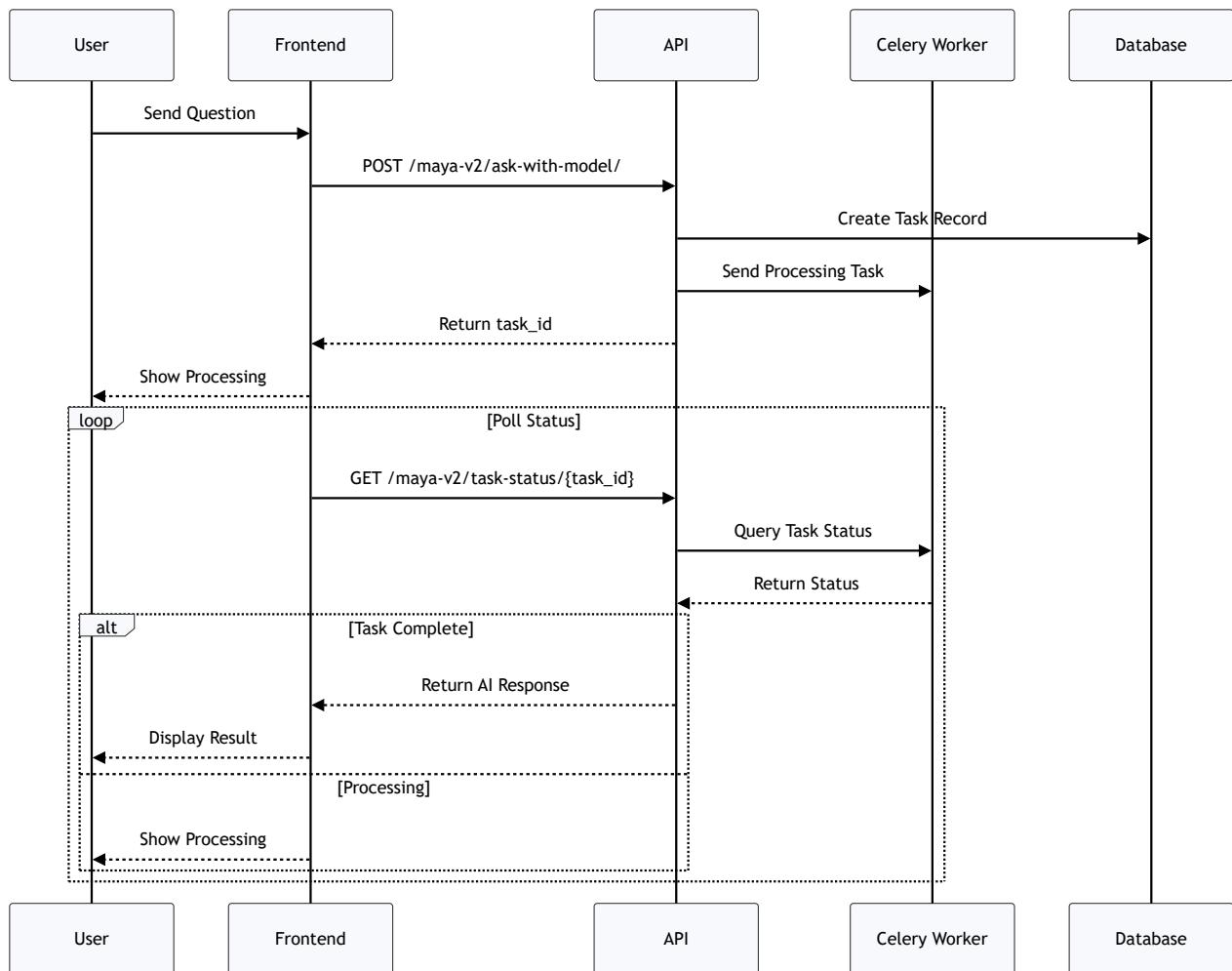
LangGraph pgvector IVFFlat Index Vector Search N-Gram in RAG Trigram Similarity

Fuzzy Text Matching

- For Maya Sawa V1, Built knowledge-based RAG chatbot using FastAPI framework with LangChain and OpenAI APIs with multi-character personality system. Implemented name detection for character profiles, semantic search for people, and vector similarity search for document context. Used LLMChain and PromptTemplate to build query workflows with personality prompt builders. Parsed and embedded documents, exposed query interface via FastAPI, and orchestrated flow with tools and chains. Integrated Redis for chat history management and session storage. Built multi-layered architecture with API Layer (FastAPI Router), Q&A Layer (QACChain, PageAnalyzer), Support Layer (NameDetector, ProfileManager, PeopleWeaponManager, PersonalityPromptBuilder, VectorStore, ChatHistoryManager), and External Services integration (OpenAI API, People System API, PostgreSQL, Redis).
- For Maya Sawa V2, Built advanced QA system using Django framework with hybrid search capabilities combining trigram and vector search in PostgreSQL using pg_trgm and pgvector extensions. Implemented full-text retrieval pipeline with GIN indexes for trigram search and IVFFlat indexes for vector search. Added support for multiple AI providers (OpenAI, Gemini, Qwen, Mock) through AIResponseService. Built comprehensive service layer with FilterChainManager, KMSourceManager, ChatHistoryService, and AIResponseService. Enhanced data layer with PostgreSQL, Redis, and Celery Broker integration. Maintained backward compatibility while adding advanced features like model management, health checks, and legacy chat history support.
- Implemented N-Gram indexing techniques in AI applications for fuzzy text matching and semantic search. Used PostgreSQL pg_trgm extension for trigram-based similarity search, enabling typo-tolerant queries and multi-language text retrieval in RAG systems.

Maya Sawa V2





Tools

WSL2 NVIDIA Container Toolkit Colab

- Set up local GPU inference with NVIDIA Container Toolkit and WSL2 on Windows. Used Colab for LLM prototyping and rapid experimentation. Tuned prompt behavior and latency benchmarks between local and remote environments.

Freelancer

Self-Employed (Client Sources Confidential) 2023/3~Present

Backend Development

Languages

PHP 12

Frameworks & Libraries

Laravel FastAPI

- Architected a Knowledge-Management QA system using FastAPI and LangChain; ingested data via Laravel APIs, stored it in PostgreSQL, and converted it into vector embeddings for semantic retrieval

Tools

Others

WordPress

AI

Frameworks & APIs

LangChain

OpenAI API

ChatOpenAI

LLMChain

PromptTemplate

LangChain RAG

- For Maya Sawa V1, Built knowledge-based RAG chatbot using FastAPI framework with LangChain and OpenAI APIs with multi-character personality system. Implemented name detection for character profiles, semantic search for people, and vector similarity search for document context. Used LLMChain and PromptTemplate to build query workflows with personality prompt builders. Parsed and embedded documents, exposed query interface via FastAPI, and orchestrated flow with tools and chains. Integrated Redis for chat history management and session storage. Built multi-layered architecture with API Layer (FastAPI Router), Q&A Layer (QACChain, PageAnalyzer), Support Layer (NameDetector, ProfileManager, PeopleWeaponManager, PersonalityPromptBuilder, VectorStore, ChatHistoryManager), and External Services integration (OpenAI API, People System API, PostgreSQL, Redis).

Maya Sawa V1

