BACKGROUND

KAO TIAN YI

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KTY is a Java Backend Engineer who joined the industry in March 2024 after roles as a banking MA (digital finance PM) and a trading-room big data researcher.

Skilled in Spring Boot multi-layered systems, PostgreSQL optimization, Redis caching, RabbitMQ, multi-threading, non-blocking I/O, RESTful API, WebSocket, enterprise security (Keycloak/JWT/OAuth2), and CI/CD with Jenkins, Docker, Kubernetes.

Experienced in OCI private node cloud architecture, Java 17 upgrades, RHEL/JBoss modernization, and exploring AI-powered knowledge systems with LangChain and PostgreSQL hybrid search.

PROJECT EXPERIENCE

Open Source Backend Engineer

Mercuries Life Insurance *2024/3~Present*

`2025/04 ~ Present` - Document Management System: Built multi-layered Spring Boot application with comprehensive backend features (@EnableRetry, @EnableCaching, @EnableRedisHttpSession, @EnableWebSecurity, @EnableMethodSecurity); designed dual PostgreSQL data sources with HikariCP connection pools, implementing composite indexes, batch queries, and N+1 query optimization; implemented WebSocket and RESTful APIs; established unit testing with JUnit5/Mockito and monitoring with Grafana/Prometheus

- designed document access control and versioning APIs
- implemented real-time file event notifications via WebSocket
- optimized PostgreSQL indexes and batch queries
- DocCore
  - structure: Document/Version/ACL
  - logic: versioning & lifecycle
  - interface: REST + WebSocket

`2025/01 ~ 2025/03` - External Portal & Portal Website: Implemented Redis-based caching with TTL management, session storage, and distributed locks for high-concurrency scenarios; configured @EnableRedisHttpSession with session timeout and fixation protection; built comprehensive error handling system with ordered exception handlers

- engineered Redis caching and session strategy (TTL
- locks)
- implemented ordered global exception handling
- tuned high-concurrency endpoints
- PortalCache
  - structure: Session/CacheEntry
  - logic: TTL cache & distributed lock
  - interface: REST + Redis Session

`2024/08 ~ 2024/09` - DevOps Management Portal: Configured enterprise-grade security with @EnableWebSecurity, @EnableMethodSecurity, JWT Authentication, OAuth2 Resource Server, and CORS; designed and implemented enterprise SSO solutions using Keycloak and RedHat SSO for secure authentication

- implemented JWT/OAuth2 resource server
- integrated Keycloak SSO
- defined fine-grained role policies
- SecAuth
  - structure: User/Role/Policy
  - logic: JWT validation & RBAC & SSO
  - interface: OAuth2 endpoints + protected REST

2024/06 ~ 2024/07 - DevOps Team Lab: Designed OCI VCN architecture with Bastion, Public/Private Subnets, OKE clusters, and Load Balancer using Terraform

- provisioned OCI VCN and OKE with Terraform
- configured load balancers and routing
- automated cluster bootstrapping
- InfraIaC
  - structure: VCN/Subnet/OKESpec
  - logic: declarative provisioning & routing
  - interface: Terraform modules/variables

2024/03 ~ 2024/05 - System Modernization & Deployment: Built JBoss War Deployment CI/CD Pipeline for UAT/PROD (10+ UAT servers); implemented Linux offline deployment strategies and containerized applications using Kubernetes and Docker Compose; led comprehensive upgrade of JBoss, MVC, and Spring/Spring Boot applications from Java 8/11 to Java 17; upgraded RHEL from 7 to 8 for 20+ servers

- created JBoss WAR CI/CD
- containerized services (Kubernetes/Docker Compose)
- executed Java 17 and RHEL 8 upgrades with rollout plans
- ReleaseKit
  - structure: Pipeline/Artifact/DeploymentPlan
  - logic: CI/CD stages & rollout & health checks
  - interface: Jenkins pipeline + K8s manifests

Freelancer

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

2023/03 ~ 2023/06 - Restaurant Booking & CMS Platform (Vue 3 + Spring Boot): Built booking + CMS with Vue 3 frontend and Spring Boot API

- designed JWT/RBAC
- shipped core CMS (employee/customer/branch/coupon/menu/order/reservation)
- delivered BI dashboards and Dockerized deployment
- RestaurantCMS
  - structure: Request → Router → Controller → Service → Repository → Database with POJO entities
  - logic: JWT/RBAC & order/reservation workflows & analytics
  - interface: REST API + JWT + SQL Server

2023/07 ~ 2023/09 - SmartSync Crawler — Online Retailer Product Information Plugin (PHP + WordPress): Automated product crawler plugin with secure admin controls

- design WordPress plugin/admin UI
- implement XPath URL collection & product extraction
- deliver styled descriptions and CSV export (UTF-8 BOM/normalized) with robust timeouts
- SmartSync
  - structure: URL Collection/Data Extraction/Content Processing/CSV Export
  - logic: XPath parsing & DOM manipulation & filtering & UTF-8 encoding
  - interface: WordPress HTTP API + CSV + admin dashboard

2024/10 ~ 2024/12 - Customer Portal Q&A Assistant System (FastAPI + LangChain): Personality-based RAG chatbot with hybrid retrieval

- built RAG pipeline on pg_trgm/pgvector (GIN/IVFFlat)
- integrated multi-LLM fallback & no-knowledge handling
- designed prompts and evaluation
- RAGCore
  - structure: ArticleEmbedding/TrigramIndex/ChatHistory
  - logic: hybrid retrieval & prompt assembly & fallback
  - interface: FastAPI + LLM adapters

Macro Associate

Tarobo Investment Advisors *2022/9~2023/1*

2022/09 ~ 2022/10 - Built automated reporting workflows; integrated SinoPac Shioaji trading API for market data ingestion and strategy prototyping, designing real-time market analysis data processing pipelines; utilized pandas, numpy and scipy for futures

price and implied volatility data analysis, implementing automated backtesting frameworks and quantitative trading strategies (Red K strategy, volatility-based dynamic rebalancing strategy)

2022/10 ~ 2022/11 - Delivered daily market intelligence reports covering emerging markets (Mexico, India, Brazil) with real-time analysis, utilized scikit-learn, statsmodels and scipy for data analysis and statistical modeling, structuring complex market data into actionable insights through systematic data flow analysis

2022/11 ~ 2022/12 - Analyzed macroeconomic indicators including container shipping trends, US retail sales, TWD currency flows, foreign exchange dynamics, and EPFR fund flows for cross-asset allocation strategies, mapping market behavior patterns to investment decision frameworks

2022/12 ~ 2023/01 - Maintained and enhanced data infrastructure across 10+ databases for comprehensive market analysis, optimizing data flow architecture for multi-source financial data integration

Fintech PM, MA Program

Far Eastern Int'l Bank *2021/8~2022/5*

2021/08 ~ 2021/09 - Built Power BI dashboards for executive and product (Bankee) KPIs; designed data models and visuals to support business reviews, translating complex business requirements into structured data flows

2021/10 ~ 2021/11 - Developed 20+ business plan drafts and successfully proposed 2 digital payment projects in collaboration with major telecommunications companies, analyzing user journey flows and payment processing logic

2021/12 ~ 2022/01 - Conducted comprehensive research on emerging fintech trends including BNPL, cryptocurrency, and online microloan product design with weekly reporting, mapping product features to user behavior patterns

2022/02 ~ 2022/03 - Managed 31 operational procedures for the digital payment department ensuring compliance and efficiency, designing workflow logic and data validation processes; implemented open-source RPA solutions using Python with Selenium for process automation and workflow optimization

2022/04 ~ 2022/05 - Created cross-industry alliance strategies with 3 proposals approved through internal review processes, resulting in 2 successful implementations,

analyzing integration requirements and data exchange protocols

Auditor

EY *2019/9~2020/3*

`2019/09 ~ 2019/10` - Automated reconciliation workflow using Excel VBA to accelerate audit working papers, designing logical data validation processes for financial data integrity

`2019/10 ~ 2019/11` - Conducted comprehensive financial statement audits covering Current Assets, Fixed Assets, Liabilities, and Equity for 20+ client engagements, analyzing financial data flows and transaction processing logic

`2019/11 ~ 2019/12` - Coordinated audit procedures across 8 specialized teams for financial services clients including equity funds and bond funds, mapping complex financial product structures to audit testing frameworks

`2019/12 ~ 2020/01` - Performed 40+ substantive analytical procedures to validate account variations and identify potential discrepancies, developing systematic approaches to financial data analysis and anomaly detection

`2020/01 ~ 2020/02` - Developed sensitivity analyses for interest rate and foreign currency exposures, along with Top 10 Suppliers/Customers concentration analysis, creating data-driven risk assessment models

`2020/02 ~ 2020/03` - Audited and analyzed 20+ Balance Sheets/Income Statements and 3+ Cash Flow Statements, structuring financial reporting data flows for compliance and analysis purposes

EDUCATION

RedHat *2024/12*

→ Red Hat JBoss Application Administration I (AD248)

iSpan *2023/10~2024/2*

→ JavaEE Career Development Program

FreeCodeCamp.com *2023/7~2023/9*

→ JavaScript Algorithms and Data Structures

→ Data Visualization

Hong Kong Polytechnic University *2020/9~2021/9*

→ Master of Finance in Investment Management

Fu Jen Catholic University *2013/9-2018/6*

→ B.B.A. in Finance and International Business

Temple University *2016/8-2017/5*

→ Global Exchange Program