Mincheol Kim

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About Me :

A backend developer with hands-on experience across infrastructure and backend systems

I have led backend development for various modules—including messaging, authentication, file storage (Drive), and large-scale WebSocket-based push messaging servers—covering everything from REST API design and database modeling (ERD) to server performance optimization. A standout achievement is the successful design and implementation of the backend for the Seoul Metropolitan Office of Education's cloud-based collaboration platform, which serves over 100,000 users. This project demonstrated my ability to architect and operate systems that handle high traffic at scale.

In addition, I bring strong DevOps expertise, having built CI/CD pipelines and deployed services across both cloud-native and air-gapped environments. I also have experience leading cross-functional teams, fostering collaboration among developers in various roles to generate technical synergy and deliver high-quality solutions.

Tech Stack

Skills

Aa 속성	≡ Proficient	⩧ Familiar	≡ Basic Understanding
<u>Language</u>	JAVA	GO JavaScript Python	C/C++ Fortran TypeScript
<u>DevOps</u>	ArgoCD Docker GItlab CI/CD Harbor Registry Helm Chart Jenkins Jeus Kubenetes Nginx Tomcat WebToB	Grafana Prometheus	
<u>Cloud</u>	HyperCloud	AWS GCP GKE	
<u>Back-End</u>	JPA ProObject QueryDSL Spring/SpringBoot	Atillery MyBatis Spring Batch	fastapi go-chi
<u>Database</u>	MySQL PostgreSQL Tibeo	Neo4j Redis	

Work Experience

KAKAO Enterprise

Search Division

Backend Engineer

2025.04~

KAKAO Integrated Search Engine

2024.04~

Description

- Developed and operated servers for KakaoTalk #Search and Daum·Nate unified search
- Maintained query filtering systems to enhance search quality and stability

Uclick

Backend Engineer

2025.03

Datafy

2024.03

Description

- Built an internal AI agent for natural language queries on HR, accounting, and sales data
- Implemented an LLM-based Q&A system to support decision-making and internal data search

TMAX WAPL

Backend Engineer

2020.09 - 2024.11

1. TMAX SuperApp

2022.09 ~ 2024.11

Description

- Developed a unified no-code platform enabling B2C users to create and deploy apps easily
- Delivered custom-built apps as B2B services based on client requirements
- Participated in key B2B projects, including:

  1-1. Seoul Metropolitan Office of Education & Korean Army cloud-based collaboration platform

  1-2. Samsung Electronics e-Tech webinar messenger

  1-3. Seonggong Restaurant community platform

  1-4. MiraeN AI-powered textbook & POSCO lunchbox service

2. TMAX WAPL Collaboration Tool

2022.09 ~ 2024.11

Description

- Collaboration tool with messenger, drive, notes, calendar, and meeting features
- Offered as a subscription-based SaaS service for enterprise clients

Project Detail

KAKAO Enterprise

Search Division

Backend Engineer

2025.04~

TASKS AND CONTRIBUTIONS

Back-End

- Developed and operated KakaoTalk #Search and Daum·Nate unified search servers using Golang
  - Built Redis-based caching and keyword suggestion APIs for fast query response
  - Designed MySQL schema for collecting search logs and storing statistical data
  - Minimized service downtime with a stable, scalable MSA-based architecture
- Maintained and improved filtering and anomaly detection servers
  - Operated real-time systems for detecting abnormal search trends and applying filtering rules

- Enhanced performance using Redis Pub/Sub and asynchronous queue-based event processing

DevOps

- Designed and automated CI/CD pipelines for MSA-based services using Jenkins and Argo CD
  - Set up Kubernetes deployment automation with YAML and Helm Charts
  - Built local development and testing environments using Docker Compose
- Operated and monitored search servers on Kakao Cloud
- Automated ad-hoc batch jobs with Argo Workflows and optimized operations

Tech Stack

- Back-End

  Golang   Redis   Mysql

- DevOps

  Kakao Cloud   Kubernetes   Docker-compose   Jenkins   ArgoCD & Argo Workflows

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Uclick

Backend Engineer

2025.03

TASKS AND CONTRIBUTIONS

Back-End

- Developed an admin tool to convert Douzone ERP RDBMS schemas into LLM-based Graph DB schemas
- Scheduled regular synchronization of modeled RDBMS data to Neo4j using batch jobs
- Efficiently handled large-scale data loads and updates with multithreaded batch processing

DevOps

- Designed and optimized GKE node pools on GCP under resource and budget constraints
- Set up monitoring with Prometheus and Grafana, including custom dashboard visualizations
- Tuned Neo4j memory and CPU performance based on monitoring insights
- Ensured stability by assigning dedicated high-performance nodes for Neo4j using taints and tolerations in Kubernetes

Tech Stack

- Back-End

  Python   fastapi   PostgreSQL   Neo4j   LangGraph & LangChain

- DevOps

  Google Cloud Platform   Bitbucket   ArgoCD   Univcorn

1-1. Seoul Metropolitan Office of Education & Korean Army cloud-based collaboration platform

TASKS AND CONTRIBUTIONS

Back-End

- Messenger Server Development
  - Designed an ERD optimized for real-time messaging data structures

2022.11~2024.11
MAU: ~120,000
Customer: Seoul
Metropolitan Office of
Education, Korean Army

- Implemented core features such as message CRUD and search with high stability
- Optimized unread message counting logic to improve performance and user experience
- Conducted large-scale load testing to verify system stability and performance
- Applied Clean Architecture for flexible and maintainable code structure
- Improved query performance through execution plan analysis and optimization

- Authentication Server Development
  - Developed a JWT & session-based authentication server using Keycloak
  - Centralized common authentication logic using Spring Filters
  - Built a user access history tracking feature
  - Integrated SSO login with Seoul Metropolitan Office of Education's internal systems

- HR System Integration
  - Synchronized personnel data via Spring APIs and DB-to-DB connections
  - Automated periodic updates using DB schedulers and PL/SQL for source HR data

DevOps

- Closed-Network Deployment for Seoul Metropolitan Office of Education
  - Led product installation in a closed network environment with external mobile access support
  - Analyzed security issues under strict firewall policies and resolved them in collaboration with security teams
  - Deployed monitoring systems for real-time visibility into cluster and application performance
  - Set up secure communication by managing SSL/TLS certificate issuance and applying them to web servers

- Designed MSA-based server architecture
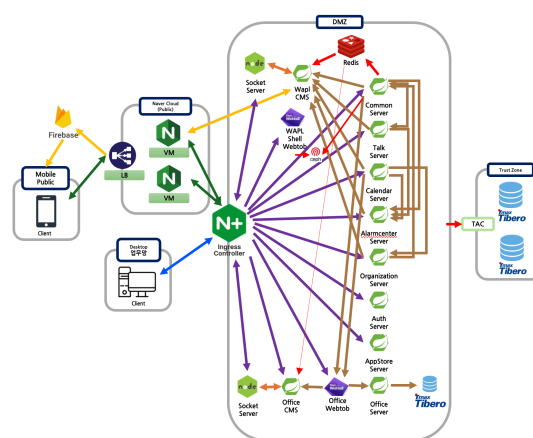
- Built a company-wide CI/CD pipeline for the entire development division
- Managed and operated development infrastructure

- Set up and maintained on-premise GitLab, including version upgrades and resource monitoring
- Deployed and operated Kubernetes-based servers for the development division

Leadership and Communication

- Led a development team of 3 front-end and 6 back-end engineers, driving project execution
- Established code conventions and a code review culture to improve code quality
- Coordinated feature details and timelines through close collaboration with the PM
- Communicated directly with clients to resolve issues during product development
- Worked with Seoul Metropolitan Office of Education's NICE engineers to test and implement SSO integration

Key Results

- Improved messenger performance by 30% compared to the legacy system
- Enhanced both security and efficiency by combining JWT and session-based authentication
- Built and operated a system capable of handling over 100,000 concurrent users
- Reduced build and deployment time by establishing a CI/CD pipeline

Tech Stack

- Back-End

  Java Spring Boot Spring Batch QueryDSL Mybatis Spring Data JPA Tibero Redis Cluster FCM Artillery

- DevOps

  Nginx Tomcat Naver Cloud Platform Kubernetes Helm Chart GitLab CI/CD Docker Harbor Registry ArgoCD Prometheus Grafana

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1-2. Samsung Electronics E-Tech webinar messenger

2023.11~2024.11
MAU: ~100,000
Customer: Samsung Electronics

TASKS AND CONTRIBUTIONS

Back-End

- Built a large-scale messenger server
  - Designed backend architecture to handle over 100,000 concurrent users
  - Implemented real-time messaging system using the Pub/Sub pattern
  - Conducted large-scale load testing to validate system stability and performance
  - Performed redundancy and failover testing; optimized Kubernetes settings to achieve failover within 5 seconds

Leadership and Communication

- Led the project task force team as technical lead
- Communicated directly with clients to resolve issues and manage incidents

Key Results

- Achieved stable performance with over 120,000 concurrent users during load tests

- Maintained average message delivery latency under 50ms, improving user experience

- Reduced service recovery time to under 5 seconds through failover optimization

Tech Stack

- Back-End

  Java Spring Boot Tibero Redis Kafka Zookeeper

- DevOps

  Nginx Tomcat Kubernetes

1-3. Seonggong Restaurant community platform

2022.11~2023.12
MAU: ~20,000
Customer: Foodist

Tasks and Contributions

Back-End

- Developed real-time WebSocket & FCM push messaging server
  - Designed scalable architecture to handle high traffic with flexible scale-out capabilities
  - Implemented stable delivery of WebSocket and FCM push messages to multiple users
  - Managed WebSocket sessions using Spring Batch for periodic cleanup and stability

- Search Engine Optimization (SEO)
  - Configured Nginx to route users and crawler bots to different servers
  - Solved SPA SEO issues by integrating a JavaScript prerender server
  - Successfully indexed the site on Google and Naver through SEO optimization

DevOps

- Implemented Nginx static file caching to reduce data usage and improve performance

- Designed an MSA-based server update strategy focused on user experience

- Deployed and managed the product using container orchestration on AWS Kubernetes

Leadership and Communication

- Led development meetings and improved authentication logic design

- Created common authentication guides and collaborated across development teams

- Coordinated features and timelines directly with clients

Key Results

- Successfully operated a high-volume push messaging server with stability

- Increased site traffic through improved visibility on Google and Naver via SEO

Tech Stack

- Back-End

Java Spring Boot Spring Batch QueryDSL Mybatis Spring Data JPA Tibero

- DevOps

  Nginx Tomcat Kubernetes Prometheus , Grafana

1-4. MiraeN AI-powered textbook & POSCO lunchbox service

2023.11~2024.11
customer: MiraeN , POSCO

Tasks and Contributions

Back-End

- Authentication Server Development
  - Designed a custom authentication architecture tailored to client requirements, without open-source dependencies
  - Created ERD and API specifications optimized for efficient authentication data processing
  - Designed and provided a frontend authentication SDK

DevOps

- Enabled FCM messaging through a closed-network gateway to communicate with Google servers
- Configured internal firewalls to allow SSO provider access from the DMZ

Leadership and Communication

- Collaborated directly with third-party SSO engineers for login integration
- Coordinated with all development teams to implement shared authentication logic and provided technical documentation

Key Results

- Delivered a stable authentication system for large-scale products
- Improved user convenience by supporting multiple authentication methods

Tech Stack

- Back-End

  Java Mybatis Tibero Netty

- DevOps

  Nginx Tomcat Kubernetes Prometheus , Grafana

2. TMAX WAPL Collaboration Tool

Tasks and Contributions

Back-End

- Drive Server Development
  - Designed file upload/download architecture to ensure stable handling of large files
  - Improved storage efficiency through physical file and metadata management architecture
  - Implemented advanced features such as file sharing, versioning, and compressed downloads to enhance user experience

DevOps

- CI/CD Pipeline Implementation

- Built automated deployment pipelines using Jenkins for both backend and frontend images
- Managed database query versions (DDL/DML) via Git and automated deployment through Jenkins for operations teams
- Maintained development infrastructure by regularly updating and stabilizing GitLab CE and Jenkins
- Test, Staging, and Production Environment Setup
  - Deployed frontend, backend, and DB servers in Kubernetes for lab testing and staging environments
  - Optimized system efficiency by analyzing cluster resource usage
  - Introduced real-time monitoring of cluster and application performance
  - Tuned Jeus and WebtoB for performance optimization in the production environment

Key Results

- Reduced deployment time by 50% and deployment errors by 30% through CI/CD automation
- Improved file handling speed by 20%, enhancing user responsiveness
- Increased client satisfaction by providing a stable and efficient collaboration environment

Tech Stack

- Back-End

  Java ProObject Framework Tibero

- DevOps

  Webtob Jeus Prometheus Grafana Jenkins Gitlab Docker

Research Experience

Yonsei Observable UNiverse Group

Astronomy Researcher

2016.03 - 2019.03

Multi-wavelength Analysis of the Merging Galaxy Cluster A115

2016.03 - 2019.03

Description

- Conducted statistical analysis of data extracted from images of galaxy cluster Abell 115 using Python
- Measured the mass distribution and total mass of the cluster, uncovering key insights into its formation and evolution
- Published as **first author** in an SCI journal (*The Astrophysical Journal*)

Tasks and Contributions

- Research Execution
  - Analyzed large-scale observational data statistically and measured mass and distribution of the galaxy cluster using weak gravitational lensing models
  - Led the entire research workflow through programming, from raw astronomical data to final results
- International Collaboration

- Conducted collaborative research in English with domestic and international Ph.D. researchers
- Presented research results in English at two international and two domestic academic
- Publication
  - Mincheol Kim *et al* 2019 *ApJ* **874** 143
- Conference Presentations

International Conferences

- AAS 231st Meeting, Washington DC (Jan 2018)
  "Mapping the Dark Matter Distribution of Merging Galaxy Cluster Abell 115"
- KIAS Workshop on Cosmology, Seoul (Nov 2016)
  "Weak-Lensing Analysis on Abell 115"

Domestic Conferences

- KAS Fall Meeting, Yeosu (Oct 2017)
  "Weak-Lensing Analysis on Abell 115"
- KAS Spring Meeting, Changwon (Apr 2017)
  "Weak-Lensing Analysis of Abell 115 with Subaru"

Tech Stack

- Programming Language

  Python   C/C++   Fortran

- Open Source

  RAF   SExtractor   Swarp   STIFF   RAMSES   Athena   etc.

- Statistics

  Jackknife Resampling, Markov Chain Monte Carlo (MCMC), P-value test, Principal Component Analysis

Education

Yonsei University Graduate School – Seoul, South Korea (Mar 2016 – Feb 2018)

- Master of Science in Astronomy and Astrophysics
- Conducted research on gravitational lensing caused by dark matter

Yonsei University – Seoul, South Korea (2010 – 2016)

- Bachelor of Science in Astronomy & Astrophysics and Physics
- Completed computer science-related coursework:
  - Object-Oriented Programming, Discrete Mathematics, Advanced Statistics, Electronic Computing (Fortran, C)

Language

- English: Fluent
  Conducted lab meetings and collaborative research in English with international Ph.D. advisors and

colleagues during three years of graduate school

- Studied abroad in Florida and Arizona, USA (Jun 2019 – Mar 2020)

- TOEIC
  935/990
  2024.10.13

- OPIC
  Advanced Low (AL)
  2024.10.13

- TEPS
  404/600
  2024.03.30

Other Experience

Patent Application 2024.04	**"Method and Apparatus for Delivering Messages to Multiple Users"** Application No. 1026589010000
Award – TMAX Maestro 2023.01	Presented to the top-performing researcher across all TMAX affiliates in 2022
Publication – First Author in SCI Journal 2019.04	Multiwavelength Analysis of the Merging Galaxy Cluster A115 Kim, M., Jee, M. J., Finner, K., et al. 2019, ApJ, 874, 143 Citation - 18 (2025.02.20)
Military Service – Republic of Korea Marine Corps 2011.03-2012.12	Served in the 2nd Division, Combat Engineer Battalion Honorably discharged with the rank of Sergeant