

# Jinhyeok Kim

Blockchain Backend Engineer

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## SUMMARY

Blockchain Backend Engineer with **27x performance optimization (25 → 678 TPS)** and **35x contract expansion** track record. End-to-end blockchain development: Hyperledger Besu/Fabric networks, Solidity smart contracts, ZKP architecture, backend APIs. **Springer ICBTA 2025 1st author**, 7 papers (5 as 1st author). Passed TTA blockchain reliability, cloud eligibility, GS certification.

## KEY ACHIEVEMENTS

- **27x Performance Optimization:** Improved Hyperledger Besu service from 25 to 678 TPS through Java 21 Virtual Threads + PM2 Cluster architecture (\$1M project)
- **35x Contract Expansion:** Resolved 2 vendors' 6-month failed issues within 1 week, expanding contract 35x
- **65x ZKP Decryption Improvement:** Analyzed Groth16 Rust circuit, identified brute-force bottleneck, reduced decryption from 35s to 0.54s
- **TTA Certification:** Passed blockchain reliability test (Fabric, Besu), cloud eligibility, GS certification, service commercialization

## EXPERIENCE

### CreativeCode Co., Ltd.

Blockchain Backend Engineer | Jun 2025 – Present | Seoul

- **Achieved 27x TPS improvement (25 → 678)** on B2B supply chain blockchain platform (\$1M scale)
  - Identified Besu response delay, Node.js event loop overload, Java Thread/DB Pool exhaustion
  - Designed 3-layer optimization: Java 17 → 21 Virtual Threads + Transaction Isolation + PM2 Cluster
  - Passed TTA blockchain reliability benchmark (500 TPS), published Springer ICBTA 2025 paper
- **Improved ZKP decryption 65x (35s → 0.54s)** through Groth16 Rust circuit analysis
  - Analyzed arkworks library, identified brute-force discrete log search as bottleneck
  - Collaborated with CES-winning company to implement elliptic curve direct computation
- **Expanded contract 35x** by resolving Amazon/Shopify platform issues
  - Solved crawling instability and bulk upload failures that 2 vendors failed for 6 months
  - Analyzed distributed infrastructure (AWS+Cafe24), redesigned unified architecture within 1 week
- Developed SpringBoot terms management API, Express+PostgreSQL+Knex.js blockchain API
- Designed Solidity smart contracts: UUPS Proxy, ZK verification, IPFS CID integration, multi-sig
- Built Private IPFS cluster, Python-based Besu automation tool, Jenkins CI/CD pipeline
- Presented blockchain solutions at Dubai GITEX, led overseas partner meetings in English

Tech: *Hyperledger Besu, Solidity, ZKP/Groth16, Node.js, TypeScript, SpringBoot, Express, PostgreSQL, IPFS, Docker, Jenkins*

### SmartM2M Co., Ltd.

Blockchain Backend Developer | Feb 2022 – Jun 2023 (1 yr 5 mo) | Busan

- **Built 3 independent Hyperledger Fabric networks** (dev/test/education) for B-SPACE convention platform
- **Passed TTA performance test (Write 400, Read 1000 TPS)** using JMeter load testing, achieved service commercialization (\$700K)
- Developed Go ChainCode for room/device reservation, TypeScript backend API with JWT/RBAC
- Led EVM/Layer2/ZK Rollup/Mina Protocol research seminars, won KCIS Best Paper Award
- Designed NFT minting/transfer module for Daegu Metropolitan Government mainnet ISP

Tech: *Hyperledger Fabric, Go, TypeScript, Node.js, MariaDB, Docker, JMeter, Grafana, Prometheus*

### Suwon University Industry-Academia Cooperation

TLO Researcher | Aug 2021 – Feb 2022 (7 mo)

- Conducted technology commercialization research, ICT project consulting (Android, PHP, Raspberry Pi)

### BNS Soft Co., Ltd.

App/Backend Developer | Jan 2020 – Jun 2020 (6 mo)

- Developed Spring Framework RESTful API, Android app with Google Dialogflow AI integration

## **SKILLS**

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**Blockchain:** Hyperledger Besu, Hyperledger Fabric, Solidity, ZKP (Groth16/snarkjs/circom), IPFS, Hardhat, ethers.js, Web3.js

**Backend:** Node.js, TypeScript, Java, SpringBoot, Go, Python, Express, REST API, Kafka

**DevOps:** Docker, Jenkins, Nginx, AWS, NCP | **Database:** PostgreSQL, MySQL, MariaDB, CouchDB

## **PUBLICATIONS (7 PAPERS, 5 AS 1ST AUTHOR)**

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- **[Springer LNNS, 1st Author]** "Breaking the Throughput Barrier: 24-Fold Performance Improvement for Hyperledger Besu Through Service-Layer Optimization" - ICBTA 2025
- **[KIPS 2025, 1st Author]** "Blockchain-based B2B Transaction and Zero-Knowledge Proof System: Ensuring Transparency and Confidentiality for DPP Compliance"
- **[KCIS 2022, Best Paper Award]** "Blockchain-based Tamper-proof Probability Control System"
- **[KCI 2021, 1st Author]** "Design and Implementation of Multi-Disaster Drone System Using Deep Learning Object Recognition and Optimal Path Search" - KTCCS Journal
- **[KIPS 2020, 1st Author, Grand Prize]** "Multi-Disaster Drone System Using Deep Learning" - Undergraduate Paper Competition
- **[IEEE IAEAC 2020, Co-author]** "Optimization of Sensor Nodes Deployment Based on Improved Differential Evolution Algorithm"
- **[KIPS 2019, 1st Author]** "Multilingual Electronic Menu Using QR Code and Local Restaurant Recommendation Algorithm"

## **AWARDS (10)**

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**Academic:** KIPS Undergraduate Paper Competition **Grand Prize** (2020) | KCIS Best Paper Award (2022) | Hanium Conference Best Award (2020)

**Competition/Other:** Hanium ICT Excellence (2020) | Hanium ICT Entry (2019) | Ministry of Education Top 300 Startup (2020) | Startup Competition Gold (2019) | NIPA ICT Mentoring Best (2020) | G-HOP Best (2020) | Career Essay Competition Best (2019)

## **EDUCATION**

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**Suwon University** - B.S. Information & Communication Engineering (2015–2021)

GPA: 3.73/4.5 | **Major GPA: 4.15/4.5** | Credits: 140 (Req. 130)

Undergraduate Researcher (3.5 years) | Thesis published in KCI Journal | IEEE paper co-author

**Certifications:** OPIC IH (2025.02) | Engineer Information Processing (2021.11)

**Military:** ROK Marine Corps, Signal Corps, Honorable Discharge (2016–2017)