DUY TIEN NGUYEN

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I own the auth service on a six-service platform being rebuilt off a monolith. Every internal request authorizes against it. Permission checks went from 32ms to under 2ms, and invalidation runs on events rather than TTLs, so a revoked permission can't outlive its revocation.

Skills

Languages: TypeScript, Python • **Working exposure:** Rust, Solidity
Backend: NestJS, Node.js, Express, gRPC, REST, Kafka • **Data:** Neo4j, MongoDB, PostgreSQL, Redis
Infrastructure & Observability: Docker, Linux, Prometheus, Grafana, GitLab CI/CD, GCP (Cloud Run, Compute Engine)

Experience

SMART GENERATION OF DIGITAL Ho Chi Minh City, Vietnam
Junior Backend Developer August 2025 - Present
Backend Developer Intern July 2024 - August 2025

- Own `auth-service`, the IAM layer every other service authorizes against, through a monolith-to-microservices rebuild: data model, caching, failure behaviour.
- Cut permission checks **from 32ms to under 2ms** with a three-tier read cascade: CASL matrices precomputed in Redis, falling back to Neo4j then MongoDB, still correct when a tier is cold. *(K6, 350 req/s, staging)*
- Invalidated cached permission matrices on events published through a Transactional Outbox rather than on TTL, **so a revoked permission never survives in cache**; consumers keyed on event UUID make retries idempotent.
- Projected the MongoDB organisation graph into Neo4j as a read model synced by change streams, keeping recursive role inheritance traversable, with cycle detection blocking circular reporting lines during org restructuring.
- Encrypted customer data at field and file level and contributed the key-wrapping layer of the platform's Rust PKCS#11 key service, **where master keys never leave the HSM**; also implemented mTLS and JWKS rotation between services.

Selected Projects

Observability & Monitoring System April - October 2025
Second Prize, University Research Competition *Prometheus, Grafana, Kafka, MinIO, Nginx, Docker*

- Instrumented a full backend stack behind a single dashboard, exposing system load and Kafka consumer-group lag through custom exporters, and used that visibility to clear message-processing bottlenecks application logs never showed.

Adaptive Load Balancing with Multi-Armed Bandits July 2026
Advanced Algorithms — individual project *Python, Monte Carlo simulation, hypothesis testing*

- Benchmarked five bandit policies against round-robin and least-connections across stationary, gradual-drift and abrupt-drift workloads (150 Monte Carlo trajectories, $T = 10{,}000$, dynamic regret), cutting mean request latency **51.9ms to 18.6ms**.
- Reported two results that **contradicted my own hypotheses**: policy rankings reverse under different tuning budgets, and forgetting mechanisms never paid off at any drift density tested.

Offline Reinforcement Learning for Ethereum Gas Cost Optimisation May 2026
Reinforcement Learning — course project *Python, Discrete CQL, PyTorch, Numba, Dynamic Programming*

- Built a hybrid Safe-RL system: a Conservative Q-Learning policy times transaction submission to exploit gas-price volatility, wrapped in a hard safety layer that makes deadline violation impossible, capturing the savings at **0% constraint breaches**.

Decentralized Fundraising Platform *Solidity, Hardhat, NestJS, IPFS*
Anchored IPFS content hashes of donation evidence on-chain, making the audit trail tamper-evident rather than trust-based.

Education

HO CHI MINH CITY UNIVERSITY OF TRANSPORT Expected December 2026
Bachelor of Science in Data Science — GPA 3.86/4.0
Honors: Eureka semi-finalist (2025) • Merit Scholarship, Top 1%
Certifications: Google Cybersecurity Professional (2025) • IBM DevOps & Software Engineering (2026)