Junyeong Heo

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Education

City University of Hong Kong	Hong Kong SAR
B. E. in Computer and Data Engineering, Department of Electrical Engineering	September 2019 - June 2025

Coursework: Cloud Computing Systems, Database Systems, Big Data, and Human-Computer Interaction

Vanderbilt University	Nashville, TN, USA
Study abroad coursework in the School of Engineering	January 2024 - May 2024

Coursework: Applied Machine Learning, Artificial Intelligence, FPGA Design, and Programming Languages

Technical Skills

Programming Languages	Python, JavaScript/TypeScript, C/C++, Rust
Frameworks and Tools	**Frontend/Mobile**: React, Next.js, React Native, Unit·Integration·E2E Testing **Backend and Database**: NestJS, FastAPI, PostgreSQL **DevOps & Infrastructure**: Git, CI/CD (GitHub Actions), AWS, Docker

Professional Experience

MotoNerv Limited	Hong Kong SAR
Hardware (Embedded Systems) Engineering Intern	June 2023 - August 2023

- Developed a prototype of an MCU-based (ESP32) dashcam for streaming video and collected sensor data
- Preprocessed on-car sensor and location data tailored for AI video analytics in the AWS cloud environment
- Implemented data pipeline to stream sensor and video data directly to AWS S3 buckets for further processing via celluar network connection

Projects

RunFit

Running crew matching platform with location-based filtering and pace-based discovery

- Designed domain-based REST API structure where request/response bodies are typed subsets of core domain models, ensuring consistency across iterative requirement changes
- Bridged frontend planning with backend implementation by establishing flexible DTO patterns that accommodate evolving product requirements
- Architected Next.js proxy layer for all API requests to centralize request/response control, preventing backend endpoint exposure and mitigating security vulnerabilities in JWT-based authentication flow
- Implemented JWT authentication with httpOnly cookies and role-based access control (RBAC), addressing server/client component authentication in Next.js App Router environment
- Integrated TanStack Query with custom factory patterns for queries/mutations and structured error handling strategy across data fetching layers

Squash Motion Tracking (Final Year Project)

Participated in Hong Kong Sport Institute (HKSI) initiated computer vision project for athlete performance analysis

- Architected a full-stack computer vision pipeline using FastAPI to track player movements and detect poses from match videos, enabling data-driven coaching insights
- Integrated a processing pipeline, including video processing and orchestration of ML models (SAM2 and YOLO) via REST API to the backend
- Optimized memory usage by implementing frame sampling for transformer-based segmentation, reducing VRAM consumption during forward/backward propagation
- Containerized the system using Docker and Docker-Compose, enabling reproducible and portable deployment with support for NVIDIA GPU acceleration for optimal model performance

Avatar community application

cross-platform mobile social networking application for community interaction

- Built a social media app using React Native with Expo, featuring tab-based navigation and interactive social feeds

- Implemented user authentication, post creation, and social interactions with type-safe form validation using React Hook Form and Zod schemas
- Integrated NestJS backend API using TanStack Query for state management and real-time data synchronization
- Developed cross-platform UI with push notifications and multi-language support (i18n) for enhanced user engagement

Leadership Activities & Other Experiences

Frontend Short-Term Intensive Course - codeit   November 2025 - January 2026
- Completed 10-week intensive program covering modern frontend development practices including Jest/React Testing Library, CI/CD pipelines, and Next.js architecture patterns
- Established team development workflows by defining code conventions, PR templates, and collaborative review processes for a 4-person team project
- Led technical architecture decisions for API structure, authentication flows, and state management patterns in a production-grade running crew platform

Data Science Coaching Study: 2024 - boostcourse   July - August 2024
- Completed 4-week program on Python data analysis covering pandas, numpy, and data visualization libraries (matplotlib, seaborn, plotly)
- Practiced exploratory data analysis techniques including correlation analysis, pivot tables, and statistical visualization on real-world datasets from KOSIS (Korean Statistical Information Service)

Student Resident (Senior Resident Tutor)   July 2024 - July 2025
Student Resident Cabinet (General Officer)   October 2022 - May 2023
Military service   August 2020 - February 2022
Private Tutoring
- International Baccalaureate (IB) Diploma Programme (DP) - Mathematics
- Electrical Engineering