Junwon Bae

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SUMMARY

Future Mobility Engineering student and full-stack builder in Kookmin University's Global PBL — a selective venture-building program in Irvine, CA. Builds real products end-to-end: a web + mobile wellness platform (celebase) and a swim-training app (PoolPace), plus a from-scratch ROS2 autonomous-driving stack. Seeking a software engineering internship in full-stack or autonomous systems.

EXPERIENCE

Kookmin University Global PBL – *Founder & Engineer · Irvine, CA* *2026 – Present*

Selected for Kookmin University's U.S.-based venture-building program; building real products end-to-end as a founder and engineer.

celebase – *Co-founder & Full-Stack Engineer*

- **Built celebase,** a web + mobile wellness platform that turns celebrity routines into personalized meal plans — Next.js web, a React Native (Expo) app, and five Fastify / FastAPI microservices on PostgreSQL and AWS.
- **Engineered a meal-plan optimizer** with OR-Tools CP-SAT (calorie, macro, and allergen constraints + variety objective), producing reproducible plans across 18 micronutrients and sex-specific RDA targets.
- **Sourced nutrition data** from the USDA FoodData Central API and kept all calorie/macro math in code, limiting LLMs to plan narration.

PoolPace – *Founder*

- **Built PoolPace,** a Flutter + FastAPI swim-training app with session logging, set-by-set workout execution, and an Apple Watch companion, backed by Firestore.
- **Calculates pace targets** (T-Pace / CSS) from 50/100/400m time trials via linear regression, blended with Apple Watch data when consistent.
- **Added an LLM coaching agent** with deterministic safety post-processing (e.g., blocking high-intensity zones for beginners).

Carpybara – *Hardware Lead*

- **Selected parts, soldered, and bench-tested** the hardware for a driving-companion prototype (ESP32, GPS/IMU) that turns real-time vehicle telemetry into character feedback.
- **Ran customer discovery** at a Rivian dealership, found that EVs do not expose standard OBD-II CAN data, and drove the team's pivot to GPS/IMU sensing for both ICE vehicles and EVs.

Kookmin Univ. AutoRace — Autonomous Racing Competition – *Integration Engineer* *2025*

- **Built a from-scratch ROS2 stack** for a 1:10 racing vehicle: 8 mission state machines, OpenCV lane/sign detection, PID control, and a Twist→Ackermann conversion layer; separately prototyped LiDAR DBSCAN clustering.
- **Diagnosed integration failures** rooted in a ROS1-vehicle / ROS2-development mismatch and documented the root causes (environment mismatch, late porting, open-loop control), shaping an interface-first approach for future builds.

LEADERSHIP & ACTIVITIES

President, Kookmin University Swimming Club *2025*

- **Grew the club by 20 members** via a mentor–mentee program and led its upgrade from provisional to official university status.

EDUCATION

Kookmin University – *B.E. in Future Mobility Engineering* *Expected Feb 2027*

- **GPA 4.04 / 4.5** · Coursework: Data Structures & Algorithms, Control System Theory (PID), Dynamics, C/C++, Python · Solved 100+ algorithmic problems on Baekjoon.

TECHNICAL SKILLS

Languages: Python, TypeScript, JavaScript, Dart, C/C++, MATLAB
Web & Mobile: Next.js, React Native (Expo), Flutter, FastAPI, Fastify, Node.js, PostgreSQL, Firebase
Robotics & AI: ROS2 (Humble), OpenCV, PyTorch, LLM application development
Tools & Cloud: AWS, Docker, Git, Stripe, pnpm / Turborepo
Spoken: Korean (native), English — TOEIC 865, OPIc IH