

Jinmin Kim (김진민)

CURRICULUM VITAE

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Portfolio: <https://rafaam11.github.io> | GitHub: github.com/rafaam11

Education

DGIST (Daegu Gyeongbuk Institute of Science and Technology)

2021.03 – 2023.02

M.S. in Robotics and Mechatronics Engineering

- Surgical Robotics and AR Laboratory (advisor: Jaesung Hong) — surgical navigation team
- Thesis: Virtual Jawbone Reduction Planning based on Dental Occlusion for Mandibular Fracture Surgery
- Oral and maxillofacial AR surgery programme (2021.06–2023.05) — early and supporting AR navigation development

Kumoh National Institute of Technology

2015.03 – 2021.02

B.S. in Mechanical System Engineering

- Undergraduate researcher, System & Vision Lab. (2019–2020)
- Completed the DGIST and UNIST summer undergraduate research programmes
- Five-bar-linkage quadruped robot (2020.04–2021.01) — mechanism design, kinematic modelling, and control; led to a patent application and an engineering-fair award
- Vice president of an invention club (2019) — patent applications and invention-contest awards; designated an outstanding education-donation club by the Ministry of Education

Professional Experience

DIGITRACK Inc. — Researcher, Software Development

2023.02 – Present

DGIST spin-off medical-device and robotics company (marker-based 3D optical tracking + software), Daegu

1) Surgical Navigation · Medical Imaging

- **Collaboration with the oral and maxillofacial surgery department of Samsung Medical Center (3+ years)** — biweekly clinical meetings since 2023. Ran two government programmes and one development contract as the main engineer, and am sole developer of the 3D Slicer-based **integrated surgical-navigation software in use at the hospital** (surgical navigation, HoloLens 2, and Meta Quest integration; since 2026.03, technical lead for digital-occlusion software: Custom App architecture, UI/UX, landmark and occlusion-engine integration, evaluation/export, under researcher validation)
- **Led development of the rTMS coil-navigation system (NeuroPilot)** — digital-twin visualisation of coil pose (health-technology government programme)
- **Low-dose C-arm 3D navigation** — connected C-arm imaging to the 3D navigation workflow and implemented the owned feature scope
- **Surface-guided respiratory tracking and 4D CT registration for radiotherapy** — owned (large KERI programme, 2026.06–)
- Delivered several development contracts for research institutes including KERI and KIMM

2) 3D Optical Tracking Software

- The in-house optical 3D tracker **SKADI: API and Viewer software development and maintenance** — the software layer of a product line delivered to Korean surgical-navigation companies and research institutes

3) Industrial Robotics — Autonomous Forklift (2025–)

- Designed and implemented the safety-policy manager (safety_manager) for the in-house autonomous-forklift solution (DOTORI); integrated LiDAR and ToF sensors over Zenoh/ROS 2
- **Own vision R&D** — truck-loading vision (ToF+RGB, SAM-family segmentation PoC, behaviour-tree integration)

4) Personal — Building with AI (2026–)

- LLM Wiki — built and operate a personal knowledge system driven by AI agents; I own the framing, architecture, and verification while delegating much of the implementation

Publications & Presentations

Ahn, J., **Kim, J.** (2026). Development and Clinical Evaluation of an Extended Reality-Based Consultation Platform "OMFS VR Consultation App" for Enhanced Patient Understanding in Orthognathic Surgery. *2026 Spring Conference, Korean Society of Medical Metaverse*. (Poster presentation)

Kim, J., Jeung, D., Cho, R., Yang, B., Hong, J. (2024). A Proof of Concept: Optimized Jawbone-Reduction Model for Mandibular Fracture Surgery. *Journal of Imaging Informatics in Medicine*. (Journal article · SCIE, Q1, IF 4.2) — joint first author

Ahn, J., **Kim, J.** (2024). Set-up of Dental Final Occlusion using Haptic Device in Orthognathic Surgery. *2024 Spring Conference, Korean Society of Medical Metaverse*. (Poster presentation · Best Poster Award)

Jeung, D., **Kim, J.**, Cho, R., Yang, B., Hong, J. (2023). Occlusion-based Jawbone Model Optimization for Mandibular Fracture Surgery. *14th Conference, Korean Society of Medical Robotics*. (Oral presentation · Best Paper Award)

Kim, J. et al. (2022). Dental Occlusion Model Using Arch Line for Mandibular Fracture Surgery. *ACCAS 2022*, Bangkok, Thailand. (Conference paper)

Kim, J., Jeung, D., Cho, R., Yang, B., Hong, J. (2022). Virtual Jawbone Model Reconstruction for Mandibular Fracture Surgery Guidance. *13th Conference, Korean Society of Medical Robotics*. (Oral presentation)

Kim, J., Kim, Y., Lee, J., Park, K. (2019). Design of Ping-Pong Ball Launcher. *ISM 2019 — International Symposium on Mechatronics*. (Conference paper)

Patents — 7 applications · 3 granted

Employment (DIGITRACK)

- [Granted] Coordinate-frame registration for real-time 3D surgical-tool tracking (10-2024-0186869, 2024.12)
- [Granted] Position tracking device and method (10-2024-0186864, filed 2024.12)
- [Filed] Two-axis rotating stereo-camera actuation device and method (10-2024-0127937, 2024.09)

Undergraduate

- [Filed] Quadruped walking robot using a multi-joint link structure (10-2021-0008332, 2021.01)
- [Granted] Clothes hanger with an elastic section (10-2019-0100328, 2019.08)
- [Filed] Assemblable carrier with adjustable storage space (10-2019-0010185, 2019.01)
- [Filed] Disposable paper-cup collection bin (10-2015-0122661, filed 2015.08)

Honors & Awards

Academic societies

- Best Poster Award (2024, Korean Society of Medical Metaverse)
- Best Paper Award (2023, Korean Society of Medical Robotics)

Undergraduate

- Grand Prize, International TRIZ Competition (2019, The International TRIZ Association)
- Grand Prize, Startup Idea Competition (2019, decontamination spray)
- Encouragement Prize, KIT Engineering Fair (2020, five-bar-linkage quadruped robot)
- Bronze Prize, ROS-based autonomous-driving training (2020)
- University Creative Invention Contest: Sponsor's Award (2019) · Excellence Award (2015)
- Excellence Award, Hyosung GREEN Earth Competition (2019, Peltier-based ESS fire-prevention system)
- Outstanding education-donation club, Ministry of Education (2019, club vice president)

Skills & Languages

Programming: Python, C++, C#

Medical imaging: 3D Slicer, DICOM, image registration (rigid/ICP), segmentation (SAM family)

3D/XR: Unity, HoloLens 2 (MRTK), Meta Quest, optical tracking

Robotics: ROS 2, Zenoh, Isaac Sim, behaviour trees

AI tooling: PyTorch, LLM-agent-based development workflow

Languages: English — intermediate (paper writing and reading) · Japanese — JLPT N2 (2021)