John Yechan Jo

U.S. Citizen (Dual with South Korea) | Military Service: ROK Auxiliary Police (Completed)
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Education

Yonsei University Mar 2020 – Feb 2027 (Expected)
Bachelor of Science in Electrical and Electronic Engineering Seoul, South Korea

- **Cumulative GPA:** 3.58 / 4.3 (Equivalent to 93.2 / 100)
- **Graduate Coursework (GPA 4.15/4.3):** Medical Artificial Intelligence (A+), Medical Imaging Systems (A0).
  **Note: Graduate coursework grades are excluded from undergraduate GPA.*

Research Experiences

MAI-LAB (Medical Artificial Intelligence Laboratory), Yonsei University Seoul, South Korea
Undergraduate Capstone Design Intern (Supervisor: Prof. Dosik Hwang) Jul – Dec 2025
Test-Time Adaptation for Magnetic Resonance Image Reconstruction

- Validated the method's architectural versatility by extending experiments from U-Net to NAFNet, consistently proving Buffer's superior performance across five k-space sampling patterns at 4x and 8x acceleration.
- Conducted rigorous ablation studies revealing an acceleration-dependent adaptation mechanism, where the critical component for adaptation shifts from the encoder (at 4x) to the decoder (at 8x).
- Demonstrated superior generalization across mismatched train-test scenarios (e.g., 4x↔8x acceleration), verifying the method's potential for real-world clinical deployment.
- **Achieved Excellence Award (2nd place) overall among 67 teams at 2025 Yonsei University EE-Festival.**

Honors and Awards

National Science & Engineering Undergraduate Scholarship 2020 – Present
Korea Student Aid Foundation(KOSAF) Seoul, South Korea

- Full merit-based scholarship awarded to top STEM students by the South Korean government, covering full tuition.

Excellence Award (2nd Place) Nov 2025
2025 Yonsei University EE-Festival Capstone Design Poster Presentation Seoul, South Korea

- Achieved 2nd place among 67 teams (**Top 3%**) for a robust MRI reconstruction framework using Test-Time Adaptation.

Letter of Appreciation (TechCamp, YTL Regional Workshop) May 2025
U.S. Department of State Seoul, South Korea

The 1st Asan UniverCT Demo Day (2nd Place) Nov 2024
The Asan Nanum Foundation Seoul, South Korea

Yonsei-Asan UniverCT Demo Day (1st Place) Aug 2024
Yonsei University Seoul, South Korea

- Developed *"Granvix"*, an EV safety system utilizing TDR-based signal processing and Vision AI for hazard detection.

Yonsei-Asan UniverCT Scholarship 2024
The Asan Nanum Foundation Seoul, South Korea

Fellowships & Global Leadership

The National Academy of Engineering of Korea (NAEK) Seoul, South Korea
Member, Young Engineers Honor Society (YEHS) Nov 2025 – Present

- Invited for the **282nd NAEK Forum** titled *"Convergence of Bio-Healthcare and AI: The Path to Future Bio-Innovation"*.

AI+X Global Talent Community, BlendED Boston, MA, USA
Korea Regional Lead & Founding Member May – Nov 2025

- Organized *"AI+X Global Networking Events"* in Japan and Korea connecting global students, engineers, and researchers.

2025 YTL Regional Workshop Series, U.S. Department of State Incheon, South Korea & Hiroshima, Japan
ROK Scholar (1 of 8 Nationwide) Mar – Jun 2025

- Selected as a scholar from ROK for fully funded program focusing on the emerging tech for solving Indo-Pacific challenges.
- Visited **Radiation Effects Research Foundation (RERF)**, Hiroshima, Japan as part of the YTL program.

MIT xPRO – BlendED Learning AI+X Program Boston, MA, USA
Project Team Leader Jan – Aug 2025

- Led Novo Nordisk, AI in Hardware, and AI in Visual Computing PBLs as a **sole team leader**.
- Completed ***"Machine Learning, Modeling, and Simulation Principles"*** course and earned **MIT xPRO Certificate**.

2024 TechCamp Korea, U.S. Department of State Gapyeong, South Korea
Young AI Leader (1 of 50 Nationwide) Oct – Nov 2024

- Selected as a **Young AI leader** for fully funded program focusing on **responsible use of AI**.
- Engaged in sessions on AI ethics, bias detection, misuse prevention, and digital trust-building strategies.

Selected Projects

FastMRI: High-Quality Brain MRI Reconstruction [GitHub] Jul – Aug 2025

- Developed DR-CAM-GAN from scratch for high-quality MRI reconstruction at 4x/8x acceleration.
- Integrated SRGAN techniques into WGAN-GP's generator, boosting PSNR by 6.75% and SSIM by 5.97%.

Smart Glasses: Brain Tumor Detection and Description from MRI Images [GitHub] May – Aug 2025

- Designed Smart Glasses with NVIDIA Jetson Nano and Ubuntu for brain tumor detection using *"YOLOv11"*.
- Utilized *"Grok 3 API"* to generate detailed tumor descriptions for enhanced medical analysis.

Tuning of Diffusion Model for Enhancing Synthetic Data Usage Ratio [GitHub] Mar – May 2025

- Fine-tuned a distilled Stable Diffusion model on 30,000 CNV images to generate 640 synthetic CNV images.
- Mixed real and synthetic data in varying ratios from 0% to 100% for binary CNV vs. Normal classification.

Masked Autoencoders for Retina Blood Vessel Segmentation [GitHub] Jan – Feb 2025

- Developed a self-supervised segmentation pipeline with ResNet-based MAE for a 1,056-retina blood vessel dataset.
- Integrated Focal Tversky Loss to handle class imbalance, and applied ReduceLROnPlateau for faster convergence.

Professional Experience

Mediark Seoul, South Korea

AI Engineer Sep 2025 – Present

Automated EMR Generation System [PDF]

- Built an **end-to-end automated Electronic Medical Record (EMR) generation pipeline** using Speech-to-Text (STT) and NLP to reduce clinical documentation time.
- **Fine-tuned LLMs** on medical terminology and context to streamline clinical documentation.

Estrogen (E2) Level Prediction for Menopausal Women [PDF]

- Designed a **deep feedforward neural network** to predict E2 levels using Age and Kupperman Index (KI) scores.
- Overcame small dataset limitations ($N = 145$) by engineering a novel data augmentation strategy (Inverse Relationship Model, GPR, SMOTE) that preserved physiological inverse correlations, expanding data by 14.2x.

AI-Based Medical Test Recommendation System [PDF]

- Built a **weight-based scoring engine** with **EXAONE** for explanations, which will be deployed at **OmniCare** and **KMI**.
- Implemented **dual-factor prompt strategy** to effectively separate primary symptoms from reference information.

Teaching Experiences

Yonsei University Incheon, South Korea

Teaching Assistant (SW Programming, Understanding and Application of Data Science) Mar – Jun 2025

- Guided courses using Python and Excel for data analysis, Keras for DL, and scikit-learn for ML techniques.

Technical Skills

Programming languages: Python, C/C++, R, MATLAB

Frameworks/Libraries: PyTorch, TensorFlow, LangChain, Neo4j

Languages: English (Professional Proficiency), Korean (Native)