




Jinwoo Seol

Product-minded AI Software Engineer

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 [Profile Website](#)

“Applied AI Engineer building production-ready systems”

Product-oriented **AI Project Lead & Senior Software Engineer** with over **3 years** of experience building clinical-grade Bio-IT systems. I specialize in bridging the gap between medical stakeholders and scalable AI architectures, transforming complex biological signals into high-impact diagnostic tools. Currently leading the '**Canopus SW**' (MSI Diagnostic) project, I manage the full product lifecycle from MVP definition and clinical requirement gathering to production-ready deployment. My engineering achievements include delivering state-of-the-art AI models with **> 0.99 AUC** for MSI prediction and **> 99.5% accuracy** for CGT cell recognition. I am an expert in building end-to-end pipelines that ensure measurable performance, stability, and regulatory compliance (CE-IVDR/MFDS) for high-stakes healthcare environments.

Websites, Portfolios, Profiles

- <https://www.linkedin.com/in/jinwoo-seol-16a233229/>
- <https://bold.pro/my/6863-251201233947>

Skills

- Deep Learning, Computer Vision
- PyTorch, TensorFlow, Sklearn
- Python, C/C#/C++, Java
- Qt / PySide6 UI Development
- MariaDB & Secure DB Control
- Secure Communication Protocols
- Linux / Windows
- Git / SVN



Core Competencies

- **AI Product Leadership & Bio-IT:** Led full clinical AI lifecycle (Requirement to Architecture) utilizing a double major in Life Science and Computer Engineering (POSTECH).
- **High-Precision AI & Signal Innovation:** Delivered state-of-the-art performance (> **0.99 AUC** for MSI; > **99.5% accuracy** for CGT) powered by patented **2 – 10 ×** signal resolution innovation
- **Full-Stack Engineering & Integration:** Built production diagnostic SW (C/C++, Python, Java, Qt) with seamless C#–Python system integration.
- **Compliance & Cybersecurity:** Expert in CE-IVDR/MFDS standards and implementing medical-grade security (Encryption/Access Control).



Work history

10.2024 - Current

Project Leader & AI Engineer – Canopus SW (MSI Analysis)

OPTOLANE, Seoul, South Korea

- **End-to-End Product Leadership:** Led the full product lifecycle of 'Canopus SW', from gathering clinical requirements from pathologists to defining MVP and system architecture.
- **High-Impact AI Engineering:** Developed an end-to-end analysis pipeline achieving > **0.99 AUC** on clinical MSI data, integrating ML modules for signal QC and noise removal.
- **Patented Technical Innovation:** Designed and patented core ultra-precise algorithms that improved data resolution by **2–10x**, significantly outperforming existing diagnostic methods.
- **Scalable System Integration:** Engineered a robust C#–Python integration layer to deploy high-performance AI algorithms within a production-ready application environment.

Tech: Python, C#, Scikit-learn, Cursor AI

06.2024 – 12.2025

AI Cell Recognition System Development

OPTOLANE, Seoul, South Korea

- Design of a CGT analysis system combining AI-based cell recognition with proprietary PCR assay data
- Development of a deep-learning-based cell recognition model with over 99.5% accuracy for automated microscopy image analysis
- Construction of the full pipeline for CGT analysis including data preprocessing, AI inference, and result visualization
- Independent development of a prototype including UI and analysis functions within two months using Cursor AI

Tech: PyTorch, TensorFlow, PySide6, PyQt, Cursor AI

09.2023 - 05.2024

Automated DNA Extraction Device Development

OPTOLANE, Seoul, South Korea

- Completion of a prototype through establishment of core functions and architecture of a nucleic acid extraction system
- Design of UI scenarios and system optimization aimed at usability and security based on analysis of medical professionals' requirements
- Development of automated consumable inspection functions and optimal path calculation systems capable of flexibly responding to various situations
- Reduction of the device control interface development period from four months to two months through outsourcing vendor management, shortening the overall project schedule
- Preparation of user manuals and technical documents for CE and MFDS certification

Tech: StarUML, Draw.io, Android, Java

10.2022 - Current

Diagnostic PCR Instrument Software Development

OPTOLANE, Seoul, South Korea

- Development of Qt-based UI and analysis algorithms on Linux and Windows platforms
- Development of diagnostic data integration functions with AWS servers using Java on Windows
- Diagnostic data management and performance optimization using MariaDB
- Design and implementation of cybersecurity functions required for medical device software, including equipment and network communication encryption, database access control, and stored data encryption
- Compliance with regulation-based development processes through preparation of user manuals and technical documentation for CE-IVDR and MFDS certification

Tech: C++, Qt, Java, Linux, MariaDB, SQL, Eclipse, SVN

03.2022 - 06.2022

Deep Learning-Based Breast Cancer Targeting Model

Personal Project

- Design of a breast cancer prediction model based on EfficientNet-B2, achieving an initial accuracy of 86%
- Improvement of model accuracy up to 93% by applying probability-density-based targeting enhancement techniques

Tech : NumPy, Pandas, Matplotlib, Seaborn, TensorFlow, Keras, Scikit-learn, Jupyter Notebook



02.2022

POSTECH (Pohang University of Science and Technology)

Bachelor of Science: Double Major: **Life Science & Computer Engineering**



Medical Development Experience

Neurogenetics Laboratory, POSTECH

- Modeling of neurodevelopmental disorders associated with congenital brain malformations.

Neuro-Epigenetics Laboratory, POSTECH

- Characterization of activity-dependent transcriptional regulation of the Arc gene in neuronal cells.

Molecular Neuroscience Laboratory, POSTECH

- Viral-mediated neural pathway mapping for anatomical and functional connectivity confirmation.

Analysis Team, Genexine, Inc.

- Development and validation of DNA-based therapeutic vaccine constructs targeting lung cancer.

C-BIOMEX

- Development of peptide-based diagnostic biomarkers for breast cancer and assessment of peptide-protein binding affinity.

Korea Brain Research Institute (KBRI)

- Analysis of behavioral phenotypes and gene-expression alterations in murine depression models under neural stimulation.