Yeon Kyoung Choi

Computer Vision Engineer
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https://tash46.github.io/

Computer Vision Engineer experienced in medical and industrial image analysis. Specialized in developing deep learning models and computer vision applications for segmentation, detection, and image enhancement. Passionate about deploying real-world AI solutions across diverse domains to solve complex visual problems.

SKILLS

Languages: Python, MATLAB

Tools & Frameworks: PyTorch, TensorFlow, Keras, ONNX, CUDA, MONAI, 3D Slicer

EXPERIENCE

02/2024 - Present **Computer Vision Engineer & CMO (Chief Marketing Officer)**
SliceMind, Seoul, Korea.

- Lead AI engineer of MetaFusion, an AI-driven multimodal medical imaging software integrating CT and PET data for unified spatial-functional analysis of tumors and organs.
- Designed and implemented deep learning architectures for multimodal image fusion, enabling precise tumor localization and metabolic profiling across full-body scans.
- Built automated pipelines for tumor detection, mask refinement, and organ-specific metabolic interpretation, reducing diagnostic variability and clinician workload.
- Formulated and executed marketing strategies to position SliceMind in the competitive AI healthcare market, targeting radiology and oncology sectors.
- Directed grant applications, investor presentations, and strategic communications, securing over $140K in combined R&D funding and partnership growth.

04/2023 - Present **Computer Vision Engineer (Assistant Manager)**
AI Development Department, PARMI, Daejeon, Korea.

- Lead AI engineer for developing AI-driven 3D Automated Optical Inspection (AOI) systems for printed circuit board (PCB) and semiconductor inspection.
- Created custom data augmentation pipelines simulating real-world variations to improve generalization.
- Pioneered a dynamic adaptive patching technique to handle background variations, lighting inconsistencies, and manufacturing tolerances in high-resolution imagery.
- Designed and deployed lightweight deep learning models for detecting submicron foreign matters on semiconductor bumps, enhancing yield in high-precision manufacturing.
- Directed the development of an end-to-end automated inspection system now integrated into AOI machines deployed globally, including by clients such as SpaceX and General Satellite.
- Represented PARMI as a technical speaker at Productronica 2023 and IPC APEX EXPO 2024, delivering proprietary AI inspection functions and engaging global stakeholders in the SMT and semiconductor industries.

EDUCATION

03/2021 - 02/2023 **M.S., Nuclear and Quantum Engineering**
Medical Imaging & Radiotherapy Laboratory, Prof. Seungryong Cho.
Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea.
Thesis title: *Automatic Teeth Segmentation of Panoramic Dental Radiographs Using Multi-Frequency Processing*

08/2015 - 02/2021 **B.S., Nuclear and Quantum Engineering**
Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea.

PROJECTS

12/2022 - 08/2023 **Gingiva Segmentation for Edentulous Patients**
Seung H. Baek D.D.S, Buena Park, CA, USA.

- Developed a deep learning algorithm to segment gingiva in edentulous patients using cone-beam CT (CBCT) scans to replace manual delineation.
- Designed a customized segmentation pipeline with anatomical preprocessing to handle irregular oral anatomy and complex gingival boundaries.
- Addressed a key bottleneck in denture fabrication workflows, improving clinical efficiency and minimizing patient discomfort.

10/2022 - 02/2023 **X-ray Battery Image Enhancement**
Innometry, Seoul, Korea.

- Developed a self-supervised framework to improve the visibility of foreign matters in low-quality X-ray images of lithium-ion batteries.
- Proposed an algorithm tailored for industrial radiography, addressing low contrast and high noise commonly found in battery X-ray images.

PUBLICATIONS

CONFERENCE

1. **Choi, Y. K.** (2025). Lightweight Real-time Semantic Segmentation of Submicron Defects in High-resolution Wafer Inspection. In *2025 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM)*. IEEE.
2. **Choi, Y. K.**, Lee, S., & Cho, S. (2023). Automatic Instant Teeth Segmentation of Panoramic Radiographs Using Multi-Frequency Processing. In *AAPM 65th Annual Meeting & Exhibition*. AAPM.
3. **Choi, Y. K.**, Lee, S., Kim, H., Hwang, J., & Cho, S. (2023). Automatic Teeth Segmentation of Panoramic Dental Radiographs. In *International Forum on Medical Imaging in Asia 2023*. IFMIA.
4. **Choi, Y. K.**, Kwon, T., Kim, H., Lee, S., & Cho, S. (2022). Automatic Teeth Segmentation of Teeth CBCT Images. In *64th Korean Society Medical Physics*. KSMP.
5. Choi, D. I., Kwon, T., Hwang, J., Hwang, J. I., **Choi, Y.K.**, & Cho, S. (2022). Virtual non-metal network for metal artifact reduction in the sinogram domain. In *7th International Conference on Image Formation in X-Ray Computed Tomography* (Vol. 12304, pp. 480-487). SPIE.

JOURNAL

1. Park, J., Song, G., Kim, W., **Choi, Y. K.**, Shin, K., & Cho, G. (2025). Comparison of Liquid Radioactive Waste Characteristics using CeBr3, LaBr3 (Ce), and NaI (Tl) Scintillators for On-Site Applications. *Radiation Measurement,* 107503.
2. Park, J., Song, G., Kim, W., Shin, K., **Choi, Y. K.**, & Cho, G. (2025). Uncertainty estimation of minimum detectable activity through sparse spectrum using kernel-based Gaussian process regression. *Radiation Physics and Chemistry, 233*, 112667.

PROFESSIONAL ACTIVITIES

REVIEWER

Conference
Flexible Automation and Intelligent Manufacturing
Journal
IEEE Transactions on Instrumentation & Measurement

RESEARCH ADVISOR

KAIST-Khalifa University Internship Program

QUALIFICATIONS

2024 **Artificial Intelligence Entrepreneur Advisor**, Korea.
2024 **Artificial Intelligence Data Expert Level 1**, Korea.
2024 **Artificial Intelligence Data Expert Level 2**, Korea.

AWARDS & HONORS

2024 **Excellence Award**, Challenge! K-Startup 2024, Seoul, Korea.
2024 **First Place**, 2024 University-Industry Collaboration Expo Student Demo Day, Seoul, Korea.
2024 **Excellence Award**, E5 KAIST, Daejeon, Korea.
2024 **Second Place**, Shin Kyuk-ho Startup Competition, Seoul, Korea.
2024 **First Place**, Value-Up Incubating Startup Idea Competition, Incheon, Korea.
2024 **Merit Award**, Chung Ju-yung Startup Competition, Seoul, Korea.
2024 **Third Place**, X-IST Startup Competition, Gwangju, Korea.
2024 **Excellence Award**, Hongneung Innopolis Campus GRaND-K Startup School, Seoul, Korea.
2024 **Second Place**, DMC Innovation Camp Startup Competition, Seoul, Korea.
2024 **First Place**, Nuclear Innovation Startup Competition, Seoul, Korea.
2023 **Best Presentation Award**, International Forum on Medical Imaging in Asia, Jeju, Korea.
2022 **Achievement Scholarship**, KAIST, Daejeon, Korea.
2021 **Excellence Award**, Nuclear-AI Integrated Conference, Seoul, Korea.
Fall 2018 **Excellent Academic Performance Scholarship**, KAIST, Daejeon, Korea.
Spring 2018 **Excellent Academic Performance Scholarship**, KAIST, Daejeon, Korea.

TEACHING EXPERIENCE

12/2022 - 02/2023 **Advanced English Reading**, KAIST.
09/2022 - 12/2022 **Introduction to Medical Physics**, KAIST.
06/2021 - 12/2022 **English Presentation & Discussion**, KAIST.
03/2021 - 12/2021 **Scientific Writing**, KAIST.