Sihwan Kim, Ph.D.

Job Intention : Post-doctoral Fellow

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Education

@ Feb. 2025

- Ph.D. in Applied Bioengineering at Seoul National University, South Korea *(Advisor: Jong Hyo Kim)*
  Dissertation: Uncertainty Minimization for Automated Seg-Hallucination Surveillance & Correction

@ Jun. 2018

- B.Sc. in Manufacturing Systems & Design Engineering at Northumbria University, UK
  Graduated with First Class Honours

Work Experience

AI Developer & Team Manager of Predictive AI *at ClariPi Inc. (Mar. 2022 ~ Aug. 2025)*

- Serving as a software engineer in healthcare, responsible for developing AI-based medical image processing algorithm.
- Maintenance and optimization of automated AI-based image processing system.
- Responsible for the development of predictive AI using key imaging biomarkers acquired from medical imaging modalities (e.g., Radiography, CT or MRI).

Research Scientist *at Biomedical Research Institute, Seoul Nat. Univ. Hospital (Jan. 2019 ~ Feb. 2025)*

Research Projects

Developing Opportunistic Health Screening Solutions in CT (Mar. 2022 ~ Aug. 2025)

- Direct software design for deep-learning-based image processing algorithm
- AI-based system optimization & visualization for medical analysis data
- Practical SW deployment for clinical settings, communicating with PACS.

Developing AI-based Fully Automated Audit Algorithms (Mar. 2021 ~ Mar. 2025)

- For CT scan range audit
- For image quality assessment in CT
- For seg-hallucination surveillance and correction in CT

Personal Summary

- Over 3.5 years of AI-SW development related work experience, rich experience in designing deep-learning-based algorithm, familiar with Python & PyTorch, proficient in image processing, especially for DICOM based medical images.
- With medical physics background and human anatomy-oriented concept, familiar with physics-based AI algorithm-design thinking. Have an ability to solve problems independently and continue to learn, work seriously, and good team spirit.

Academic Awards

- Certificate of Merit Poster Award, Radiological Society of North America (RSNA) 2024 Conference, USA, Dec. 2nd, 2024
- Excellence Poster Award, Institute of Radiation Medicine, SNU Medical Research Center, South Korea, Jan. 17th, 2023
- ICRP Student Paper Contest Winner, 6th International Symposium on the System of Radiological Protection, Canada, Nov. 8th, 2022
- Best Paper Award, International Forum on Medical Imaging in Asia (IFMIA), Taiwan, Jan. 16th, 2021
- Best Poster Award, 4th International Tribology Symposium of IFToMM & 1st Korea-Tribology International Symposium, South Korea, Mar. 22nd, 2017

Publications

Journal Articles

- **Kim. S.** Park. E.A., Ahn. C., Jeong. B., Lee Y., Lee W., & Kim J. H. (2025). Performance of Fully Automated Deep-learning-based Coronary Artery Calcium Scoring in ECG-gated Calcium CT and Non-gated Low-dose Chest CT. *European Radiology*.
- Lee. J. E., Kim. N. Y., Kim. Y., Kwon. Y., **Kim. S.**, & Han. K. (2025). Long-term Prognostic Implications of Thoracic Aorta Calcification on CT using Artificial Intelligence-based Quantification in a Screening Population: Two-Center Study. *American Journal of Roentgenology*.
- **Kim, S.**, Park, C., Jeon, G., Kim, S., & Kim, J. H. (2025). Automated Audit and Self-Correction Algorithm for Seg-Hallucination Using MeshCNN-Based On-Demand Generative AI. *Bioengineering*, *12*(1), 81.
- Kang, B. J., Kim, K. H., Hong, S. B., Lee, N. K., Kim, S., **Kim, S.**, & Ha, H. K. (2024). Clinical Application of Artificial Intelligence-Based Computed Tomography Analysis of Myosteatosis in Localized Renal Cell Carcinoma. *Journal of Urologic Oncology*, *22*(3), 237-245.
- **Kim, S.**, Jeong, W. K., Choi, J. H., Kim, J. H., & Chun, M. (2022). Development of deep learning-assisted overscan decision algorithm in low-dose chest CT: Application to lung cancer screening in Korean National CT accreditation program. *PLOS ONE*, *17*(9), e0275531.
- **Kim, S.**, & Ahn, H. S. (2022). Nanotribological properties and scratch resistance of MoS2 bilayer on a SiO2/Si substrate. *Friction*, *11*(1), 154-164.
- Chun, M., Choi, J. H., **Kim, S.**, Ahn, C., & Kim, J. H. (2022). Fully automated image quality evaluation on patient CT: Multi-vendor and multi-reconstruction study. *PLOS ONE*, *17*(7), e0271724.
- **Kim, S.**, Ahn, C., Jeong, W. K., Kim, J. H., & Chun, M. (2021). Estimation of Noise Level and Edge Preservation for Computed Tomography Images: Comparisons in Iterative Reconstruction. *Progress in Medical Physics*, *32*(4), 92-98.

Publications

Conference Proceedings

- Park C., **Kim, S.**, & Kim, J. H., Noise power spectrum analysis in clinical CT scans for improved patient-specific image optimization: a shift from phantom to clinical evaluation. In *Medical Imaging 2025 (April): Physics of Medical Imaging* (Vol. 13405, pp. 885-892). SPIE.
- **Kim, S.**, Ahn, C., & Kim, J. H., How to overcome the data limited segmentation in abdominal CT: Multi-planar UNet coupled with augmented contrast-boosting. In *Medical Imaging 2023 (April): Image Processing* (Vol. 12464, pp. 659-664). SPIE.
- Lee, D. I., **Kim, S.**, Ahn, C., Heo, C., & Kim, J. H., Synthesis of ghost-free panoramic radiographs from dental CBCT images. In *Medical Imaging 2020 (March): Physics of Medical Imaging* (Vol. 11312, pp. 669-674). SPIE.

Technology Patents

- **[Registration]** Method, System and Non-Transitory Computer-Readable Recording Medium for Automatic Evaluation of Normal Scan of Chest CT, 10-2647726-0000, Chun M., Jeong W. and **Kim, S**., Republic of Korea, Mar. 14 (2024)
- **[Application]** Apparatus and Method for Auditing of Artificial Intelligence-based Medical Image Segmentation Apparatus, PATENT-2023-0091368, **Kim, S.** and Kim, J. H., Republic of Korea, Jul. 13 (2023)

Professional Skills

Friendly Machine Learning & Deep Learning Framework

- PyTorch (Advanced) / TensorFlow (Intermediate)
- ONNX (Advanced)
- TensorRT (Intermediate)

Programming Languages

- Python (Advanced), C/C++ (Intermediate), Rust (Beginner), Swift (Beginner)

Domain Knowledge

- Medical Physics for X-ray (Advanced), CT (Advanced) and MRI (Intermediate)
- Computer Vision (Advanced) / Medical Image Processing (Advanced)
- Statistics (Advanced) / Data Science (Advanced)
- Radiology (Intermediate) / Radiomics (Intermediate)

References

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