Curriculum Vitae
Seongjun Park

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Education

- **Ph.D., Computer Science** *May. 2025 – Current*
  Johns Hopkins University, MD, USA. (Advisor: Prof. Emad Boctor)

- **M.S., Electronic Engineering** *Feb. 2023 – Feb. 2025*
  Sogang University, Seoul, Republic of Korea. (Advisor: Prof. Yangmo Yoo)
  Thesis: A Study on Twinkling Artifact for Detecting Breast Microcalcifications

- **B.E., Electronic Engineering** *Feb. 2017 – Feb. 2023*
  Sogang University, Seoul, Republic of Korea.

- **B.E., Computer Science and Engineering,** *dual major* *Feb. 2017 – Feb. 2023*
  Sogang University, Seoul, Republic of Korea.

Research Interest

- **Advanced ultrasound imaging algorithms for disease identification**
  - Early-phase breast cancer diagnosis detecting twinkling artifact from micro-calcification
  - Contrast-enhanced super resolution imaging system
- **Artificial intelligence (AI) based signal processing and medical imaging**
  - Twinkling artifact classification algorithms for signal enhancement
  - Deep learning algorithm for ultrasound image quality enhancement
- **Point-of-Care ultrasound imaging system**
  - Wearable vector doppler ultrasound system for bedside hemodynamics monitoring
  - Highly efficient parallel algorithms for software-based handheld Doppler ultrasound imaging systems

Research Experiences

- **Research assistant** *May. 2025 – current*
  Department of Computer Science, Johns Hopkins University, MD, USA.
  - Laser ultrasound

- **Research assistant** *Feb. 2023 – May.2025*
  Department of Electronic Engineering, Sogang University, Seoul, Republic of Korea.
  - Microcalcifications detection system using twinkling artifact
  - Contrast enhanced super-resolution framework

- **Research intern** *Feb. 2021 – Feb. 2023*
  Department of Electronic Engineering, Sogang University, Seoul, Republic of Korea.
  - Continuous hemodynamics monitoring system using vector doppler
  - Study on parallel computing solution for software Doppler ultrasound imaging system

Research Projects

- **Reseacher**, *Precision Surgical Intervention (PSI) Project, May.2025 – current, (Advanced Research Projects Agency for Health, (ARPA-H), U.S. Department of Health and Human Services, United States of America)*

- **Researcher**, *Study on twinkling artifact signal enhancement for early phase breast cancer detection system, Jul.2024 – April.2025, (Samsung Medison, Co., Ltd., Seoul, Republic of Korea).*

- **Researcher**, *Contrast enhanced super resolution research software framework, May.2024 – Nov.2024, (Samsung Medison, Co., Ltd., Seoul, Republic of Korea).*

- **Researcher**, *Deep-learning framework for high-quality plane wave imaging, Feb.2023 – Dec.2024*

- **Researcher**, *Wearable vector Doppler imaging system for continuous cardiac output monitoring, Apr.2023 – Dec.2023, (Design project competition, Department of Electronic Engineering, Sogang University, Republic of Korea)*

- **Researcher**, *A Software-based Real-time color Doppler ultrasound imaging system on a SoC, Feb. 2022 – Apr.2023, (Undergraduate research student program, Department of Electronic Engineering, Sogang University, Republic of Korea)*

Awards, Scholarships and Honors

- **Student Travel Grant Award,** *Aug 2024*
  IEEE Ultrasonics, Ferroelectrics, and Frequency Control Joint Symposium 2024

- **Excellence Award** on Sogang Paper Competition *Dec. 2023*
  Department of Electronic Engineering, Sogang University, Seoul, Republic of Korea

- **Honer of cum laude** *Feb. 2023*
  Sogang University, Seoul, Republic of Korea

- **Second Prize** on Design Project Competition *Dec. 2022*
  Department of Electronic Engineering, Sogang University, Seoul, Republic of Korea
  Vector Doppler ultrasound system for non-invasive wearable cardiac output monitoring equipment

- **Industrial scholarship** *Spring 2022 – Fall 2024*
  LG Innotek, Seoul, Republic of Korea

- **Scholarship** for Academic Excellence *Spring 2021 – Fall 2022*
  Jung-hun scholarship foundation, Seoul, Republic of Korea

Teaching Experiences

- **Teaching Assistant** *Fall 2023*
  "Computer Architecture", Department of Electronic Engineering, Sogang University, Seoul, Republic of Korea
  - Designed and evaluated term projects

- **Teaching Assistant** *Spring 2023*
  "Microprocessor Laboratory", Department of Electronic Engineering, Sogang University, Seoul, Republic of Korea
  - Mentored individual students and reviewed the assignments

- **Student mentor** *2023 – 2024*
  "Fundamentals of medical ultrasound", Medical Imaging Computing Systems Laboratory, Department of Electronic Engineering, Sogang University, Seoul, Republic of Korea.
  - Fundamental physics of medical ultrasound
  - Theory and implementation of beamforming in medical ultrasound

Extracurricular Activities

- **Intern** *Jul. 2023 – Aug. 2023*
  LG Innotek, Seoul, Republic of Korea
  Developed Stepped Frequency Modulated Continuous Wave (SFCW) Radar simulation software

- **Student representative** *May. 2023 – May. 2024*
  Medical Imaging Computing Systems Laboratory, Department of Electronic Engineering, Sogang University, Seoul, Republic of Korea.

- **Defense service** *Jan. 2019 – Aug. 2020*
  Military intelligence group, Headquarters, 1st Corps of the Republic of Korea Army, Gyeonggi -do, Republic of Korea.

- **President** *Jun. 2018 – Jan. 2019*
  Sogang Astronomy, Sogang University, Seoul, Republic of Korea.

Publications

Peer-reviewed journal articles

1. Kang, J., **Park, S**., Lee, E., Cho, H., Kim, K., Kim, M & Yoo, Y. (2026) Classification of Twinkling Artifacts and Blood Flow Signals for In Vivo Breast Microcalcification Detection

2. Cho, H., Lee, J., **Park, S.**, & Yoo, Y. (2025). Numerical investigation of optimal transmission-reception conditions for aliasing-free ultrasound localization microscopy Ultrasonics (2025): 107704.

3. Cho, H., **Park, S.**, Kang, J., & Yoo, Y. (2024). Deep Coherence Learning: An Unsupervised Deep Beamformer for High Quality Single Plane Wave Imaging in Medical Ultrasound. Ultrasonics (2024): 107408.

4. **Park, S.**, & Yoo, Y. (2022). A New Fast Logarithm Algorithm Using Advanced Exponent Bit Extraction for Software-Based Ultrasound Imaging Systems. Electronics 12.1: 170.

Under review

1. **Park, S.,** Cho, H., Song, I., Jang, J., & Yoo, Y. (2025) New Cross-Shaped Ultrasound Array for a Vector Doppler-Based Wearable Blood Flow Monitoring System

In preparation

Conferences & Presentations

1. Yoo, J., Han, S., **Park, S.**, Cho, H., Song, I., & Yoo, Y. (2025). A New Vector Doppler Technique for Cost-Effective Hemodynamic Monitoring. IEEE International Ultrasonics Symposium (IUS).

2. Lee, J., **Park, S.**, Cho, H., & Yoo, Y. (2025). DeepTAI: Deep learning-based twinkling artifact imaging for microcalcification detection in breast ultrasound. IEEE International Ultrasonics Symposium (IUS).

3. Lee, E., **Park, S.**, Cho, H., & Yoo, Y. (2025). A New Compounding Method using Spatiotemporal Features for Twinkling Artifact Imaging. IEEE International Ultrasonics Symposium (IUS).

4. **Park, S.**, Song, I., Jang, J., & Yoo, Y. (2024). New Ultrasound Technique for Detecting Kidney Stones Utilizing Spectral Broadening in Twinkling Artifacts. IEEE Ultrasonics, Ferroelectrics, and Frequency Control Joint Symposium (UFFC-JS). Oral Presentation

5. **Park, S.**, Jang, J., Song, I., & Yoo, Y. (2023). New Vector Doppler Imaging System for Cardiac Output Monitoring using a Cross-Shaped Ultrasound Probe: Feasibility Study. IEEE International Ultrasonics Symposium (IUS). Oral Presentation

6. Cho, H., **Park, S.**, Kang, J., & Yoo, Y. (2023). Deep Coherence Learning: an Unsupervised Deep Learning Framework for High-Quality Plane Wave Imaging. IEEE International Ultrasonics Symposium (IUS).

7. **Park, S.**, Cho, H., Kim Y., Song, I., Jang, J., Kim, J., & Yoo, Y. (2022). A Real-Time Color Doppler Ultrasound Imaging System on a Single System-on-Chip Solution with Single Instruction Multiple Data Optimization. IEEE International Ultrasonics Symposium (IUS).

Patents

Registered

1. **Park, S.**, Jang, J., Song, I., & Yoo, Y. "Detection device for calcification," Korean Patent No. 10-2837440, registered on July 18, 2025.