Curriculum Vitae
Sangseo Jeon, Ph.D.

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PERSONAL INFORMATION

- **Name**: Sangseo Jeon
- **Gender**: Male
- **Birth**: 3rd Feb, 1988, in South Korea
- **Nationality**: Korean
- **Language**: Korean (Native language) & English (Good)
- **Address**: Center for Healthcare Robotics, Artificial Intelligence and Robotics Institute, Korea Institute of Science and Technology, L8423, 5 Hwarang-ro 14-gil, Seongbuk-gu, Seoul, 02792, South Korea
- **Email**: sjeon@kist.re.kr (official), gumpmv@gmail.com (personal)
- **Telephone**: +82-2-958-xxxx (official), +82-10-4696-4480 (personal)

EDUCATION

Mar. 2014 - Aug. 2021	**Ph.D. Robotics Engineering, Daegu Gyeongbuk Institute of Science and Technology (DGIST), South Korea** Thesis: X-ray Camera-to-Position Sensor Calibration using Paired-Point Correspondences without Camera Pose Estimation for Image Guided Surgery (Advisor: Professor Jaesung Hong) GPA: 4.06/4.30
Mar. 2012 - Feb. 2014	**M.S. Robotics Engineering, Daegu Gyeongbuk Institute of Science and Technology (DGIST), South Korea** Thesis: Development of Surgical Navigation System for Less Invasive Therapy of Intervertebral Disk Disease (Advisor: Professor Jaesung Hong) GPA: 4.23/4.30
Mar. 2006 - Feb. 2012	**B.S. Biomedical Engineering, Yonsei University, South Korea** GPA: 3.88/4.30

RESEARCH INTERESTS

- Image-guided surgery
- Medical augmented/virtual reality navigation
- Registration
- Calibration
- Computer vision

RESEARCH EXPERIENCE

Sep. 2021 - Present	**Postdoctoral Researcher**, Center for Healthcare Robotics, Artificial Intelligence and Robotics Institute, Korea Institute of Science and Technology, South Korea
Mar. 2012 - Aug. 2021	**Graduate Student Researcher**, Department of Robotics Engineering, Daegu Gyeongbuk Institute of Science and Technology, South Korea

JOURNAL PUBLICATIONS

1. Lee S, Lee H, Choi H, **Jeon S**, Ha H, Hong J, Comparative study of hand–eye calibration methods for augmented reality using an endoscope, Journal of Electronic Imaging, 27(4), 043017, July 2018.

2. Ha H, **Jeon S**, Lee S, Choi H, Hong J, Perspective pinhole model with planar source for augmented reality surgical navigation based on C-arm imaging, International Journal of Computer Assisted Radiology and Surgery, 13(10):1671-1682, July 2018.

3. Song C, **Jeon S**, Lee S, Ha H, Kim J, Hong J, Augmented reality-based electrode guidance system for reliable electroencephalography, BioMedical Engineering OnLine, 17(1):64, May 2018.

4. **Jeon S**, Chien J, Song C, Hong J, A Preliminary Study on Precision Image Guidance for Electrode Placement in an EEG Study, Brain Topography, 31(2):174-185, Mar 2018.

5. Lee S, Lee H, Choi H, **Jeon S**, Hong J, Effective calibration of an endoscope to an optical tracking system for medical augmented reality, Cogent Engineering, 4(1): 1359955, Jul 2017.

6. **Jeon S**, Park J, Chien J, Hong J, A hybrid method to improve target registration accuracy in surgical navigation, Minimally Invasive Therapy & Allied Technologies, 24(6):356-363, Nov 2015.

7. **Jeon S**, Lee G, Jeon Y, Park I, Hong J and Kim J, A preliminary study on surgical navigation for epiduroscopic laser neural decompression, Proceedings of the Institution of Mechanical Engineers Part H Journal of Engineering in Medicine, 229(10):693-702, Oct 2015.

PATENTS

1. Kang W, Hong J, **Jeon S**, Image Processing Apparatus and Method for Generating Virtual X-ray Image, KR - Registration No. 10-2354701, 2022.01.19

2. **Jeon S**, Hong J, Calibration Method of X-ray Apparatus and Calibration Apparatus for the Same, KR - Registration No. 10-2289327, 2021.08.06

3. **Jeon S**, Hong J, Calibration Method and Apparatus of X-ray Apparatus, KR - Registration No. 10-2285337, 2021.07.28

4. Song C, **Jeon S**, Hong J, System and Method of Directing Biosignal Detector Arrangement, US - Registration No. 10-653-360, 2020.05.19

5. **Jeon S**, Hong J, Calibration Method of X-ray Apparatus and Calibration Apparatus for the Same, KR - Registration No. 10-2082272, 2020.02.21

6. **Jeon S**, Hong J, Apparatus for Image Overlay and Method for the Same, KR - Registration No. 10-2042762, 2019.11.04

7. Hong J, **Jeon S**, Lee S, Navigation System for Vascular Intervention and Method for Generating Virtual X-ray Image, KR - Registration No. 10-1954868, 2019.02.27

8. Hong J, **Jeon S**, Song C, System for Directing Placement of Detector for Measuring Bio-Signal and Method Thereof, KR - Registration No. 10-1853560, 2018.04.24

9. Hong J, **Jeon S**, Chien J, A System for Inducing the Electroencephalogram Electrode Displacement, KR - Registration No. 10-1797375, 2017.11.07

10. Hong J, Kim J, **Jeon S**, Hybrid Navigation System and Method to Track Position Thereof, KR - Registration No. 10-1491922, 2015.02.03

11. Hong J, **Jeon S**, Lee S, Navigation System for Vascular Intervention and Method for Generating Virtual X-ray Image, US - Application No. 15-499116, 2017.04.27

CONFERENCE PROCEEDINGS AND ABSTRACTS

1. **Jeon S**, Hong J, Medical Navigation to Assist in Chronic Total Occlusion Intervention, 16th International Conference on Ubiquitous Robots, pp. 617-619, 2019.

2. Ha H, **Jeon S**, Lee S, Choi H, Hong J, Perspective pin-hole model with planar source for augmented reality surgical navigation based on C-arm imaging, Proceedings of CARS 2018, 13:S191, 2018.

3. Kang W, **Jeon S**, Hong J, A Fast Intensity-based 3D-2D Registration of Coronary Angiograms and Computed Tomographic Images, Proceeding of ACCAS 2017, 2017.

4. Lee S, Nam K, Jung D, **Jeon S**, Han I, Hong J, 척추경 나사 삽입술을 위한 환자 맞춤형 도구 기반 수술 내비게이션, 2017 Annual Conference of Korea Society of Medical Robot, 2017.

5. Song J, **Jeon S**, Lee S, Hong J, Markerless Augmented Reality-based Navigation for Precise Electrode Positioning, Proceeding of ACCAS 2016, pp. 92-93, 2016.

6. **Jeon S**, Hwangbo S, Hong J, A Surgical Navigation System to Assist in Chronic Total Occlusion Intervention, Proceeding of 13th International Conference on Ubiquitous Robots and Ambient Intelligence (URAI), pp. 132-134, 2016.

7. **Jeon S**, Chien J, Song J, Hong J, Image Guidance for Improving Electrode Placement Precision in EEG Study, Proceeding of CARS 2016, 11:S258-S259, 2016.

8. Song J, **Jeon S**, Lee S, Hong J, 마커리스 증강현실 기반 전극 배치 내비게이션, Proceeding of Korean CDE 2016, pp. 463-464, 2016.

9. Chien J, **Jeon S**, Kim J, Hong J, EEG Electrode Navigation System with High Repeatability, Proceeding of ACCAS 2015, 2015.

10. **Jeon S**, Jeon Y, Kim C, Hong J, Kim J, A surgical navigation system for epiduroscopic laser neural decompression, The 32nd Spring Congress Korean Society of Spine Surgery, 22:S66-S67, 2015.

11. Chien J, **Jeon S**, Choi S, Kim J, Hong J, Navigation-based EEG Electrode Placement Method, 7th International IEEE/EMBS Conference on Neural Engineering (IEEE EMB Conference), 2015.

12. Chien J, **Jeon S**, Hong J, EEG 전극 배치를 위한 영상유도 내비게이션 시스템의 개발, 2014 Annual Conference of Korea Society of Medical Robot, pp. 65-67, 2014.

13. **Jeon S**, Hong J, Surgical navigation system for assisting epiduroscopic laser neural decompression (ELND) procedure. its clinical application in 14 patients, Proceeding of CARS 2014, 9:S104-105, 2014.

14. **Jeon S**, Kim J, Hong J, Hybrid Navigation System for Epiduroscopic Procedure, Proceeding of ACCAS 2013, pp. 58-59, 2013.

15. Chien J, Park J, **Jeon S**, Hong J, Improvement of Target Registration Accuracy with Anatomical Landmarks, The Hamlyn Symposium on Medical Robotics, pp. 53-54, 2013.

16. **Jeon S**, Hong J, 3 차원 증강현실 기반 수술 내비게이션 시스템의 개발, 2013 Annual Conference of Korea Society of Medical Robot, pp. 40-42, 2013.

17. **Jeon S**, Kim J, Hong J, A Surgical Navigation System for Epiduroscopy using Magnetic Position Tracking System and Virtual Reality, Proceeding of the 46th conference of Korean Society of Medical & Biomedical Engineering, pp. 060, 2012.

RESEARCH PROJECTS

2019 - 2020	"*Development of Navigation System for Minimally Invasive Spine Surgery*", participating researcher, supported by Korea Electrotechnology Research Institute (KERI), South Korea
2016 - 2017	"*Development of Navigation System for Bone Deformation and Fracture Reduction Surgery*", participating researcher, supported by Korea Government, Ministry of Trade, Industry and Energy (MOTIE), South Korea
2015 - 2019	"*Development of Navigation System for Cardiovascular Intervention*", participating researcher, supported by Korea Government, Ministry of Trade, Industry and Energy (MOTIE), South Korea
2014 - 2015	"*Development of Navigation System for EEG Electrode Placement*", participating researcher, supported by Daegu Gyeongbuk Institute of Science and Technology (DGIST), South Korea
2013 - 2015	"*Development of Navigation System for ENT and Neurological Surgery*", participating researcher, supported by Korea Government, Ministry of Trade, Industry and Energy (MOTIE), South Korea

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| 2012 - 2014 | "*Development of Navigation System for Epiduroscopic Neural Decompression Intervention*", participating researcher, supported by Daegu Gyeongbuk Institute of Science and Technology (DGIST), South Korea |

AWARDS, SCHOLARSHIPS AND HONORS

Dec. 2018	**Outstanding Student Award**, Daegu Gyeongbuk Institute of Science and Technology (DGIST), South Korea.
Aug. 2016	**Best Poster Award** Song J, **Jeon S**, Lee S, Hong J, Markerless Augmented Reality-based Navigation for Precise Electrode Positioning, 2016 The Sector Union Conference of Society for Computational Design and Engineering.
Aug. 2010	**Academic Excellence Award & Scholarships**, Yonsei University, South Korea. (awarded to the top 10% of the student body per semester)
Feb. 2010	**Academic Excellence Award & Scholarships**, Yonsei University, South Korea. (awarded to the top 3% of the student body per semester)
Feb. 2007	**Academic Excellence Award & Scholarships**, Yonsei University, South Korea. (awarded to the top 10% of the student body per semester)

SKILLS

Programming Languages	C/C++, MATLAB
Libraries	MFC, Qt, Armadillo, OpenCV, OpenIGTLink, VTK, ITK
Applications	3D Slicer, MS Visual Studio, Qt Creator, Inventor, MS Office