

# Curriculum Vitae

Updated on 14 Feb. 2020

## 1. Personal Information

**Name** Jaesung Hong  
**Gender** Male  
**Telephone** +82-53-785-6201  
**Email** jhong@dgist.ac.kr  
**Website** <http://sr.dgist.ac.kr>  
**Address** E5-509, Department of Robotics Engineering, DGIST,  
333, Techno-jungang-daero, Hyeonpung-myeon,  
Dalseong-gun, Daegu, Republic of Korea



## 2. Biographical Summary

Jaesung Hong received the B.S. and M.S. degrees in electronic engineering from Kyungpook National University, Korea, and the Ph.D. degree in frontier science from The University of Tokyo, Japan in 2004. He worked as a Foreign Researcher of the Japan Society for the Promotion of Science with the Graduate School of Information Science and Technology, University of Tokyo. From 2005 to 2010, he worked as a research professor with Kyushu University, Fukuoka, Japan.

Dr. Hong is currently a professor of Department of Robotics Engineering, DGIST, South Korea. His research interests include surgical navigation, surgical robotics, and Augmented/Virtual Reality. At the University of Tokyo, he has developed the first US-guided needle insertion robot for a movable and deformable organ. While he worked at Kyushu University Hospital, he developed customized surgical navigation systems, and clinically applied them to various surgeries.

After moving to DGIST, he studied medical augmented and virtual reality in collaboration with major hospitals of Korea. He has also performed various government research projects including an endoscopic bone drilling robot and augmented reality for arthroscopy.

He worked as a key board member of Korean Society of Medical Robotics and Asian Society of Computer-aided Surgery. He is also co-chair of the IEEE/RAS technical committee on surgical robotics.

## 3. Education

Apr. 2001 – Mar. 2004. PhD of Frontier Science, Graduate School of Frontier Science,  
The University of Tokyo, Japan  
(Thesise: Image-guided needle insertion instrument adapted to organ  
motion and deformation)

Feb. 1999 - Feb. 2000. Research student, Information Engineering,  
Toyohashi University of Technology, Japan

Mar. 1997 - Feb. 1999. Coursework completion for PhD, Graduate School of Electronics,  
Kyungpook National University, Korea

Mar. 1995 - Feb. 1997. Master of Engineering, Graduate School of Electronics,  
Kyungpook National University, Korea

Mar. 1991 - Feb. 1995. Bachelor of Engineering, Graduate School of Electronics,  
Kyungpook National University, Korea

#### 4. Position and Appointments

Mar. 2017 - Present Professor, Department of Robotics Engineering, DGIST  
Apr. 2015 - Jun. 2017 Department Chair, Department of Robotics Engineering, DGIST  
Oct. 2010 - Feb. 2017 Associate Professor, Department of Robotics Engineering, DGIST  
Apr. 2010 - Sep. 2010 Associate Professor, Innovation Center for Medical Redox Navigation,  
Kyushu University  
Jan. 2008 - Mar. 2010 Research Associate Professor, Innovation Center for Medical Redox  
Navigation, Kyushu University  
May. 2005 - Dec. 2007 Research Assistant Professor, Faculty of Medical Sciences, Kyushu  
University  
Apr. 2004 - Apr. 2005 JSPS Foreign Researcher, Graduate School of Information Science and  
Technology, The University of Tokyo

#### 5. Journal Publication (JCR indexed)

- Lee S, Shim S, Ha H, Lee H, **Hong J\***, Simultaneous Optimization of Patient-Image Registration and Hand-Eye Calibration for Accurate Augmented Reality in Surgery, IEEE Transactions on Biomedical Engineering, doi: 10.1109/TBME.2020.2967802, Jan 2020
- Shim S, Ji D, Lee S, Choi H, **Hong J\***, Compact Bone Surgery Robot with a High-resolution and High-rigidity Remote Center of Motion Mechanism, IEEE Transactions on Biomedical Engineering, doi: 10.1109/TBME.2019.2963705, Jan 2020
- Micic I, Kholinne E, Hong H, Choi H, Kwak JM, Sun Y, **Hong J**, Koh K, Jeon I, Navigation-assisted suture anchor insertion for arthroscopic rotator cuff repair, BMC Musculoskeletal Disorders, 20(1):633, Dec 2019
- Ji D, Kang T, Shim S, **Hong J\***, Analysis of Twist Deformation in Wire-driven Continuum Surgical Robot, International Journal of Control, Automation and Systems, Online publish DOI: <http://dx.doi.org/10.1007/s12555-018-0400-7>, July 2019
- Ji D, Kang T, Shim S, Lee S, **Hong J\***, Wire-driven flexible manipulator with constrained spherical joints for minimally invasive surgery, International Journal of Computer Assisted Radiology and Surgery, 14(8):1365-1377, Aug 2019
- Ahn J, Choi H, **Hong J**, Hong J, Tracking Accuracy of a Stereo Camera-Based Augmented Reality Navigation System for Orthognathic Surgery, Journal of Oral and Maxillofacial Surgery, 77(5):1170.e1-1170.e11, May 2019
- 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

- Ha H, Jeon S, Lee S, Cho 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*, 13:1671-1682, July 2018
- Shim S, Choi H, Ji D, Kang W, **Hong J\***, Robotic System for Bone Drilling Using a Rolling Friction Mechanism, *IEEE/ASME Transactions on Mechatronics*, 23(5):2295-2305, July 2018
- Kholinne E, J.Gandhi M, Adikrishna A, Hong H, Kim H, **Hong J**, Jeon I, The Dimensionless Squared Jerk: An Objective Parameter That Improves Assessment of Hand Motion Analysis during Simulated Shoulder Arthroscopy, *Biomed Research International*, Volume 2018, Article ID 7816160, 8page, July 2018
- Lee S, Kim J, **Hong J**, Baek S, Kim S, CT-based Navigation System Using a Patient-Specific Instrument for Femoral Component Positioning: An Experimental in vitro Study with a Sawbone Model, *Yonsei Medical Journal*, 59(6):769-780, Aug 2018
- 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
- Cho H, Park M, Gupta S, Han I, Kim H, Choi H, **Hong J**, Can Augmented Reality Be Helpful in Pelvic Bone Cancer Surgery? An In Vitro Study, *Clinical Orthopedics and Related Research*, Volume Publish Ahead of Print - Issue – p, Feb 2018
- 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
- Cho H, Park Y, Gupta S, Yoon C, Han I, Kim H, Choi H, **Hong J**, Augmented reality in bone tumour resection, *Bone & Joint Research*, 6(3):137-143, 2017
- Jung K, Choi H, Hong H, Adikrishna A, Jeon I, **Hong J\***, A hands-free region-of-interest selection interface for solo surgery with a wide-angle endoscope: preclinical proof of concept, *Surgical Endoscopy*, 31(2):974-980, 2017
- Choi H, Park Y, Lee S, Ha H, Kim S, Cho H, **Hong J\***, A portable surgical navigation device to display resection planes for bone tumor surgery, *Minimally Invasive Therapy & Allied Technologies*, 26(3):144-150, 2017
- Shim S, Kang T, Ji D, Choi H, Joung S, **Hong J\***, An all-joint-control master device for single-port laparoscopic surgery robots, *International Journal of Computer Assisted Radiology and Surgery*, 11(8):1547-1557, 2016
- Jung K, Kang D, Aashay L, Adikrishna A, **Hong J\***, Jeon I, A new wide-angle arthroscopic system: a comparative study with a conventional 30° arthroscopic system, *Knee Surgery Sports Traumatology Arthroscopy*, 24(5):1722-1729, 2016
- Lim H, Matsumoto N, Cho B, **Hong J**, Yamashita M, Hashizume M, Yi B, Semi-manual

mastoidectomy assisted by human–robot collaborative control – A temporal bone replica study, *Auris Nasus Larynx*, 43(2):161-165, 2016

- Choi H, Cho B, Masamune K, Hashizume M, **Hong J\***, An Effective Visualization Technique for Depth Perception in Augmented Reality-based Surgical Navigation, *International Journal of Medical Robotics and Computer Assisted Surgery*, 12(1):62-72, 2016
- 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, 2015
- 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, 2015
- Cheon B, Erkin G, Ji D, Tomikawa M, Hashizume M, Kim H, **Hong J\***, A single port laparoscopic surgery robot with high force transmission and a large workspace, *Surgical Endoscopy*, 28(9):2719-2729, 2014
- Oka M, Cho B, Matsumoto N, **Hong J**, Jinnouchi M, Ouchida R, Komune S, Hashizume M, A preregistered STAMP method for image-guided temporal bone surgery, *International Journal of Computer Assisted Radiology and Surgery*, 9(1):119-126, 2014
- Tsutsumi N, Tomikawa M, Uemura M, Akahoshi T, Nagao Y, Konishi K, Ieiri S, **Hong J**, Maehara Y, Hashizume M, Image-guided laparoscopic surgery in an open MRI operating theater, *Surgical Endoscopy*, 27(6):2178-2184, 2013
- Cho B, Oka M, Matsumoto N, Ouchida R, **Hong J\***, Hashizume M, Warning navigation system using real-time safe region monitoring for otologic surgery, *International Journal of Computer Assisted Radiology and Surgery*, 8(3):395-405, 2013
- Inoue D, Cho B, Mori M, Kikkawa Y, Amano T, Nakamizo A, Yoshimoto K, Mizoguchi M, Tomikawa M, **Hong J**, Hashizume M, Sasaki T, Preliminary Study on the Clinical Application of Augmented Reality Neuronavigation, *Journal of Neurological Surgery Part A-Central European Neurosurgery*, 74(2):71-76, 2013
- Kobayashi Y, Hamano R, Watanabe R, **Hong J**, Toyoda K, Hashizume M, Fujie G, Use of puncture force measurement to investigate the conditions of blood vessel needle insertion, *Medical Engineering & Physics*, 35(5):684-689, 2013
- Matsumoto N, Oka M, Cho B, **Hong J**, Jinnouchi M, Ouchida R, Hashizume M, Komune S, Cochlear Implantation Assisted by Noninvasive Image Guidance, *Otology & Neurotology*, 33(8):1333-1338, 2012
- Kobayashi Y, **Hong J\***, Hamano R, Okada K, Fujie G, Hashizume M, Development of a needle insertion manipulator for central venous catheterization, *International Journal of Medical Robotics and Computer Assisted Surgery*, 8(1):34-44, 2012
- Masamune K, **Hong J\***, *Advanced Imaging and Robotics Technologies for Medical Applications*,

International Journal of Optomechatronics, 5(4): 299-321, 2011

- Kim S, **Hong J\***, Joung S, Yamada A, Matsumoto N, Kim S, Kim Y, Hashizume M, Dual Surgical Navigation Using Augmented and Virtual Environment Techniques, International Journal of Optomechatronics, 5(2): 155-169, 2011
- Souzaki R, Kinoshita Y, Matsuura T, Tajiri T, Taguchi T, Ieiri S, **Hong J**, Uemura M, Konishi K, Tomikawa M, Tanoue K, Hashizume M, Koga Y, Suminoe A, Hara T, Kohashi K, Oda Y. Successful resection of an undifferentiated sarcoma in a child using a real-time surgical navigation system in an open magnetic resonance imaging operation room, Journal of Pediatric Surgery, 46(3):608-611, 2011
- Ieiri S, Nakatsuji T, Higashi M, Akiyoshi J, Uemura M, Konishi K, Onimaru M, Ohuchida K, **Hong J**, Tomikawa M, Tanoue K, Hashizume M, Taguchi T, Effectiveness of basic endoscopic surgical skill training for pediatric surgeons, Pediatric Surgery International, 26(10):947-954, 2010
- Tomikawa M, **Hong J**, Shiotani S, Tokunaga E, Konishi K, Ieiri S, Tanoue K, Akahoshi T, Maehara Y, Hashizume M, Real-Time 3-Dimensional Virtual Reality Navigation System with Open MRI for Breast-Conserving Surgery, Journal of the American College of Surgeons, 210(6):927-933, 2010
- **Hong J**, Hashizume M, An Effective Point-based Registration Tool for Surgical Navigation, Surgical Endoscopy, 24(4):944-948, 2010
- Maeda T, **Hong J**, Konishi K, Nakatsuji T, Yasunaga T, Yamashita Y, Taketomi A, Kotoh K, Enjoji M, Nakashima H, Tanoue K, Maehara Y, Hashizume M, Tumor ablation therapy of liver cancers with an open magnetic resonance imaging-based navigation system, Surgical Endoscopy, 23(5):1048-1053, 2009
- **Hong J**, Matsumoto N, Ouchida R, Komune S, Hashizume M, Medical navigation system for otologic surgery based on hybrid registration and virtual intraoperative computed tomography, IEEE Transactions on Biomedical Engineering, 56(2):426-432, 2009
- Matsumoto N, **Hong J**, Hashizume M, Komune S, A minimally invasive registration method using surface template-assisted marker positioning (STAMP) for image-guided otologic surgery, Otolaryngology–Head and Neck Surgery, 140(1):96-102, 2009
- **Hong J**, Hata N, Konishi K, Hashizume M, Real-time magnetic resonance imaging driven by electromagnetic locator for interventional procedure and endoscopic therapy, Surgical Endoscopy, 22(2):552-556, 2008
- Yasunaga T, Konishi K, Yamaguchi S, Okazaki K, **Hong J**, Ieiri S, Nakashima H, Tanoue K, Fukuyo T, Hashizume M, MR-compatible laparoscope with a distally mounted CCD for MR image-guided surgery, International Journal of Computer Assisted Radiology and Surgery, 2(1):11-18, 2007
- **Hong J**, Nakashima H, Konishi K, Ieiri S, Tanoue K, Hashizume M, Interventional navigation for abdominal surgery by simultaneous use of MRI and ultrasound, Medical & Biological Engineering & Computing, 44(12):1127-1134, 2006

- **Hong J**, Dohi T, Hashizume M, Konishi K, Hata N, An ultrasound-driven needle insertion robot for percutaneous cholecystostomy, *Physics in Medicine & Biology*, 49(3):441-455, 2004
- **Hong J**, Kaneko T, Sekiguchi R, Park K, Automatic liver tumor detection from CT, *IEICE Transactions on Information and Systems*, E84-D(6):741-748, 2001

## 6. Conference Proceeding and Abstract (selected)

- Kim S, Shim S, Ji D, **Hong J**, Wave-Shape Notched Compliant Joint with High Rigidity, *Proceeding of Hamlyn Symposium on Medical Robotics 2019*, 2019
- 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, *Proceeding of CARS 2018*, 2018
- Shim S, Lee S, Ji D, Choi H, **Hong J**, Trigonometric ratio-based remote center of motion mechanism for bone drilling, *Proceeding of IROS 2018*, 2018
- Shim S, Choi H, Ji D, Kang W, **Hong J**, Vision guided robotic system for bone drilling based on rolling friction, *IROS 2017 Workshop on Medical Imaging Robotics*, 2017.
- Lee S, Kim J, **Hong J**, Kim H, Beak H, Kim S, Computed Tomography-Based Navigation System Using a Patient-Specific Instrument for Femoral Component Positioning: An Experimental in Vitro Study With a Sawbone Model, *Proceeding of ISTA 2017*, 2017
- Lee S, Cho B, Matsumoto N, Hashizume M, **Hong J**, Augmented Reality System with a Simple Interface for Endoscopic Ear Surgery, *Proceeding of EMBC 2017*, 2017
- Lee S, **Hong J**, Kim B, Kim S, Kim J, Computed tomography-based navigation system using a patient-specific instrument for femoral component positioning: an experimental in vitro study with a sawbone model, *Proceeding of CARS 2017*, 2017.
- Jeon S, Chien J, Song J, **Hong J**, Image Guidance for Improving Electrode Placement Precision in EEG Study, *Proceeding of CARS 2016*, 2016
- Shim S, Kang T, Ji D, **Hong J**, All Joints Controlling Master Device For Y-Type Single Port Laparoscopic Surgery Robot, *Proceeding of CARS 2015*, 10:S248-S249, 2015
- Choi H, Park Y, Joung S, Cho H, **Hong J**, A simple and portable surgical navigation system for bone tumor resection, *Proceeding of CARS 2015*, 10:S85-S87, 2015
- 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
- Lee S, Lee H, Choi H, **Hong J**, A Simple and Accurate Camera-Sensor Calibration for Surgical Endoscopes and Microscopes, *The 2014 Workshop on Augmented Environments for Computer Assisted Interventions (AECAI 2014)*, pp98-107, 2014
- Shim S, Ji D, Arata J, Hashizume M, **Hong J**, A Master Slave Y-type Single Port Laparoscopic

Surgery Robot with High Force Transmission and Large Workspace, Hamlyn Symposium on Medical Robotics, pp27-28, 2014

- Shim S, Ji D, Hashizume M, Arata J, **Hong J**, A whole arm mimicking master device for single incision laparoscopic surgery robot, Proceeding of CARS 2014, 9:S313-S315, 2014.
- 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-S105, 2014.
- Choi H, **Hong J**, Zoom lens calibration for surgical microscope, Proceeding of CARS 2014, 9:S160-S161, 2014.
- Cheon B, Ji D, Erkin G, **Hong J**, Development of a New Single Port Surgery Robot with Increased Torque, Proceeding of CARS 2013, 8:S112-S113, 2013
- Chien J, Park J, Jeon S, **Hong J**, Improvement of Target Registration Accuracy with Anatomical Landmarks, The Hamlyn Symposium on Medical Robotics, 2013
- Choi H, **Hong J**, Augmented reality navigation system for ear surgery, The Hamlyn Symposium on Medical Robotics, video presentation, 2013
- Cheon B, Erkin G, **Hong J**, Design of a New Single Port Surgery Robot with Large Torque and Workspace, Proceeding of the IAS-12, p38, 2012
- Tomikawa M, **Hong J**, Akahoshi T, Tsutsumi N, Ohuchida K, Ieiri S, Ohdaira T, Hashizume M, Usefulness of a real-time virtual reality navigation system using and open magnetic resonance imaging: tumor ablation therapy for 50 liver cancers, Proceeding of CARS 2011, 6:S95-S96, 2011
- Oka M, Cho B, Matsumoto N, **Hong J**, Komune S, Hashizume M, Pre-registered STAMP method for instant registration in image-guided temporal bone surgery, Proceeding of CARS 2011, 6:S123-S124, 2011
- Cho B, Oka M, Matsumoto N, **Hong J**, Hashizume M, Augmented reality of surgical microscope for otologic surgery, Proceeding of CARS 2011, 6:S245-S246, 2011
- Chung J, Toyoda K, **Hong J**, Tomikawa M, Hashizume M, Implementation of a 4-DOF master device with a hybrid structure for a needle insertion task, Proceeding of CARS 2011, 6:S280-S281, 2011
- **Hong J**, Matsumoto N, Ouchida R, Komune S, Hashizume, An optimally designed surgical navigation system for otologic surgery, Proceeding of CARS 2008, 1:S251-S252, 2008
- **Hong J**, Konishi K, Nakashima H, Ieiri S, Tanoue K, Nakamuta M, Hashizume M, Integration of MRI and ultrasound in surgical navigation for robotic surgery, Proceeding of IFMBE 2006, vol. 14, pp2930-2933, 2006
- **Hong J**, Konishi K, Nakashima H, Ieiri S, Tanoue K, Hashizume M. Hashizume, Image-guided abdominal surgery by integration of MRI and ultrasound, Proceeding of IFMBE 2006, vol. 14,

pp4026-4028, 2006

- **Hong J**, Muragaki Y, Inomata T, Nakamura R, Hata N, Dohi T, Iseki H, Intraoperative 3-D Display of Tumor Resection Status based on the Trace of Surgical Device, IFMBE Proceeding of IFMBE 2005, vol. 8, PA-3-89(CD), 2005
- **Hong J**, Dohi T, Hashizume M, Konishi K, Hata N, A motion adaptable needle placement instrument based on tumor specific ultrasonic image segmentation, Lecture Notes in Computer Sciences, Proceeding of MICCAI 2002, vol. 2488, pp122-129, 2002
- **Hong J**, T. Kaneko, R. Sekiguchi, K. Park, Computer-aided Diagnostic System Based on Liver CT image, IAPR Workshop on Machine Vision Applications, pp419- 422, 2000

## 7. Patents (registered)

### Korea Patents

- Jeon S, **Hong J**, Apparatus for image overlay and method for the same, *Korea Patent Number* 10-2042762, 2019-11-04
- Choi H, **Hong J**, Projector, method for creating projection image and system for projecting image, *Korea Patent Number* 10-2002231, 2019-07-15
- Shim S, **Hong J**, Apparatus for positioning instrument, *Korea Patent Number* 10-1976961, 05/02/2019
- Ha H, **Hong J**, Park I, Park C, Oh C, Lee S, Jeong S, Chien J, Navigation apparatus and method for fracture correction, *Korea Patent Number* 10-1961682, 03/19/2019
- Park S, Song W, Choi H, Seo D, Song C, **Hong J**, Deformable scaffold, manufacturing method thereof and deforming, recovery method, *Korea Patent Number* 10-1957562, 03/06/2019
- Kim M, **Hong J**, Choi H, Method for tracking marker, apparatus and system for executing the method, *Korea Patent Number* 10-1929471, 12/10/2018
- Jeon I, Hong H, **Hong J**, Choi H, Jung K, Augmented Reality Angle Measuring Apparatus for Non-radiographic Correction Osteotomy Surgery, *Korea Patent Number* 10-1868120, 06/08/2018
- Choi H, **Hong J**, Park Y, Shim S, An Apparatus for guiding a needle and a system incorporating the same, *Korea Patent Number* 10-1862924, 05/24/2018
- Shim S, **Hong J**, An Apparatus for inserting a needle, *Korea Patent Number* 10-1855581, 04/30/2018
- **Hong J**, Jeon S, Song J, System for directing placement of detector for measuring bio signal and method thereof, *Korea Patent Number* 10-1853560, 04/24/2018
- Kang T, Ji D, **Hong J**, Moon J, Endoscopic structure for variable length, *Korea Patent Number* 10-1828010, 02/05/2018



- Lee S, **Hong J**, Kim J, Kim S, A Surgical navigation system for total hiparthroplasty, *Korea Patent Number* 10-1817438, 01/04/2018
- **Hong J**, Jeon S, Chien J, A system for inducing the electroencephalogram electrode displacement, *Korea Patent Number* 10-1797375, 11/07/2017
- Jeon I, Hong H, **Hong J**, Choi H, Jung K, A medical gyro stick, *Korea Patent Number* 10-1746761, 06/07/2017
- **Hong J**, Choi H, Jung K, Jeon I, Hong H, Anold E, Tool for selection of image of region of interest and its use of selection method, *Korea Patent Number* 10-1707113, 02/09/2017
- Jeon I, Aashay K, **Hong J**, Choi H, Jung K, Method for displaying a surgery instrument by surgery navigation, *Korea Patent Number* 10-1652888, 08/25/2016
- **Hong J**, Choi H, Jo H, Device and method for measuring using augmented reality, *Korea Patent Number* 10-1629134, 06/02/2016
- **Hong J**, Choi H, Camera parameter computation method, *Korea Patent Number* 10-1596868, 02/17/2016
- **Hong J**, Choi H, Method for operating surgical navigation system and surgical navigation system, *Korea Patent Number* 10-1536115, 07/07/2015
- **Hong J**, Park J, High accuracy image matching apparatus and high accuracy image matching method using a skin marker and a feature point in a body, *Korea Patent Number* 10-1492940, 02/06/2015
- **Hong J**, Kim J, Jeon S, Hybrid navigation system and method to track position thereof, *Korea Patent Number* 10-1491922, 02/03/2015
- **Hong J**, Cheon B, Surgery robot, *Korea Patent Number* 10-1401138, 05/22/2014

### **International Patent**

- **Hong J**, Cheon B, Surgery robot, *US Patent Number* US 9,795,448 B2, 10/24/2017
- **Hong J**, Park J, High accuracy image matching apparatus and high accuracy image matching method using a skin marker and a feature point in a body, *US Patent Number* US 9,342,887 B2, 05/17/2016
- **Hong et al**, Needle Insertion System, *Japan Patent Number*, JP 5531239, 05/09/2014

## **8. Technology Transfer**

- Retro-reflective marker identification system (Know-how), 2018, DGIST
- Navigation software for dental implant (Know-how), 2017, DGIST
- Needle Insertion System, (JP5531239), 2016, Kyushu University

## 9. Media Coverage (selected)

- [Augmented Reality Surgical Navigation](#), Donga-science, 2018
- [Lab Interview](#), TBC Good Day Friday, 2017
- [Augmented Reality for Bone Tumore Surgery](#), Chosun Health, 2016
- [Augmened Reality for Orthognathic Surgery](#), Samsung Seoul Hospital Blog, 2016
- [Ear Surgery Robot](#), Dong-A Ilbo, 2011

## 10. Research Fundings (selected)

- Surgical Navigation for Oral and Maxillofacial Surgery, Co-PI, Korea Government (MOTIE), 2019-2023
- Bone Endoscopic Surgery Robot, PI, Korea Government (MOTIE), 2018-2022
- Computer-aided Practice for Dental Implant, Principal Investigator (PI), Korea Government (SMBA), 2016~2020
- Bone Deformation and Fracture Reduction Device, PI, Korea Government (MOTIE), 2016-2019
- Micro-robot for chronic total occlusion treatment, Co-PI, Korea Government (MOTIE), 2015-2018
- Image Processing and Augmented Reality for Arthroscopy, PI, Korea Government, PI, Korean Government (MOHW), 2013-2018
- DGIST Convergence Science for Rehabilitation of Aged People, Co-PI, Institute (DGIST), 2011-2019
- Surgical Robot and Navigation System for ENT and Neurological Surgery, PI, Korea Government (MOTIE), 2011-2015
- Multi-modal Image Registration, PI, Samsung (SAIT), 2011
- Development of Intuitive 3D Surgical Navigation, PI, Japan Government (KAKEN/Wakate-A), 2008-2010
- Needle Insertion Robot for Central Vein Catheterization, PI, Japan Government (KAKEN/Houga), Japan, 2008-2009
- US-guided Needle Insertion Robot for Moving Organ, PI, Japan Government (KAKEN/Kiban-C), Japan, 2005-2007

## 11. Awards and Honors

- Best Paper Award  
Choi H, Lee H, Hong J, The Development of Optical Tracking System and Registration Method for Dental Implant Navigation, 2018 Annual Conference of Korean Society of Medical Robotics
- 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
- DGIST Contribution Award  
Hong J, 2013
- Best Video Presentation  
Choi H, Hong J, Augmented Reality Navigation System for Ear Surgery, Augmented Reality & Surgical Guidance Workshop in The Hamlyn Symposium on Medical Robotics, 2013
- Best Paper Award  
Park J, Hong J, High accuracy target registration method using ultrasonography, The 4th SPENALO

International Symposium on marine and Medical Robotics (SIS), 2012

- Best Paper Award  
Tomikawa M, Hong J, Akahoshi T, Tsutsumi N, Ohuchida K, Ieiri S, Ohdaira T, Hashizume M, Usefulness of a real-time virtual reality navigation system using and open magnetic resonance imaging: tumor ablation therapy for 50 liver cancers, International Society of Computer Aided Surgery (ISCAS) in Computer Assisted Radiology and Surgery (CARS), 2011
- Best Paper Award  
Hong J, Lim H, Yi B-J, Lee SH, Jeong JH, Matsumoto N, Oka M, Komune S, Hashizume M, Phantom Experiment of An Ear Surgery Robot for Automatic Mastoidectomy, Proceeding of the 5th International Conference on the Advanced Mechatronics(ICAM), 2010
- Presentation Paper Award, Tomikawa M, Konishi K, Akahoshi T, Hong J, Ieiri S, Tanoue K, Maehara Y, Hashizume M, Image-guided Laparoscopic Surgery and its Equipments in Open MRI Therapeutic Room, J. JSCAS 11(3):352-353, 2009
- Best Paper Award  
Hong J, Matsumoto N, Ouchida R, Komune S, Hashizume M, Image-guided Otologic Surgery based on Patient Motion Compensation and Intraoperative Virtual CT, ACCAS2007, 2007
- Best Engineering Paper Award  
Hong J, Dohi T, Hashizume M, Konishi K, Hata N, Tomographic Image Driven Needle Insertion Robot Adaptive to Organ Motion and Deformation, J. JSCAS 5(4):443-448, 2007
- Presentation Paper Award, S.Nishimura, K.Hamata, T.Yasunaga, J.Hong, H.Nakashima, K. Konishi, M.Hashizume, K.Tanoue, Contrast Enhancement of Sentinel Lymph Node using Interventional-MR, J. JSCAS 8(3):204-205, 2006
- Presentation Paper Award, E.Aoki, K.Shimizu, G.Ali, J.Hong, E.Kobayashi, N.Hata, R.Nakamura, T.Maruyama, Y.Muragaki, H.Iseki, I. Sakuma, Development and Evaluation of the Integrated system of different platforms for Neurosurgery(translated), J. JSCAS 7(3):359-360, 2005
- Japan Government (JSPS) Postdoctoral Fellowship for Foreign Researchers 2004
- Japan Government (Monbukagakusho) Scholarship 2001

## 12. Invited Talks (selected)

- Augmented Reality for Surgery & Computer-Assisted Orthopedic Surgery, Invited talk, The Summer school of Shanghai Jiao Tong University, Shanghai, Jul 2019.
- Augmented Reality for Surgical Vision, Invited talk, Annual Conference of SJTU Institute of Medical Robotics, Shanghai, Dec 2018.
- Anti-Aging and AR/VR, Invited talk, APAAC 2018, Daegu, Nov 2018.
- Surgical Navigation based on AR/VR Technology, Invited talk, SMIT\_IBEC2018, Seoul, Nov 2018.
- Surgical Navigation using Augmented Reality, Invited talk, ICCAS 2017, Jeju, Oct 2017.
- Augmented Reality and Surgical Navigation, Invited talk, ICBME 2016, Singapore, Dec 2016.
- Surgical Navigation for Microrobot, Invited talk, IROS 2016 Workshop on Microrobots for next generation biomedical applications, Daejeon, Oct 2016
- Augmented Reality in Medicine, Plenary talk, Annual Fall Conference of Korea CDE Society, Busan, Aug 2016
- Robotics Challenge of South Korea, Invited talk, UK Robotics Week, IET International Robotics Showcase 2016, London, Jul 2016
- Principle and Issues of Surgical Navigation, Distinguished lecture, Hamlyn Medical Center, London, Feb 2016

- Principle and Applications of Image-guided Surgery, Invited talk, ACCAS2015, Singapore, Oct 2015
- Possibility and Technical Issues of Surgical Navigation, Invited talk, Joint Annual Conference of KSMR, KSGE, and K-NOTES. Seoul, Sep 2015
- Surgical Navigation and Surgical Robot, Invited talk, ELSA 2015, Daegu, Sep 2015
- Application of Surgical Navigation, Invited talk, ISSIS 2015, Seoul, Jun 2015
- Principle and Application of Surgical Navigation, Surgical Grand Round, Severance Hospital, Yonsei University, Seoul, 2014
- Surgical Imaging and Robot, Samsung Advanced Institute of Technology (SAIT) Forum, Suwon, May 2011
- Surgical Image and Robot for Minimally Invasive Surgery, International Symposium for Industrial, Academic and Research Institutions Collaboration, Kyungpook National University, Daegu, Jun 2010

### **13. International Activity and Service (selected)**

- Co-organizer, IROS 2019 workshop on Intelligent Robot Interactions with the Anatomy, 2019
- Program co-chair, 10th Annual Conference of Korea Society of Medical Robotics, 2019
- Co-chair, Technical Committee on Surgical Robotics of IEEE/RAS, 2016-present
- Co-organizer, IROS 2016 workshop (ISCAS/ASCAS/IROS jointed) on Intelligent Instruments and Software for Future Medical Workspace, 2016
- Board member of international affairs, Asian Society of Computer Aided Surgery, 2015-present
- Associate Editor, IEEE Robotics and Automation Letters, 2015-present
- Financial chair, Korea Society of Medical Robotics, 2014-present
- International network chair, Korea Society of Medical Robotics, 2011-2013
- Organizing committee, Frontier of Computer Vision (FCV) 2012 Conference, 2012
- General Secretary, 3<sup>rd</sup> Annual Conference of Korea Society of Medical Robotics, 2011
- Program co-chair, 7<sup>th</sup> Asian Conference on Computer Aided Surgery (ACCAS), 2011
- Program committee, Computer Assisted Radiology and Surgery (CARS), 2010-present
- International program committee, 6th International Conference on Ubiquitous Robots and Ambient Intelligence (URAI), 2009
- Award committee, International Conference on Intelligent Robots and Systems (IROS) 2009, 2009
- Program co-chair, 5th Asian Conference on Computer Aided Surgery (ACCAS), 2009
- Appointed reviewer, Journal of Japan Society of Computer-Aided Surgery (JSCAS), 2008-2010