# SUNGHWAN LIM

CONTACT INFORMATION

Korea Institute of Science and Technology, Center for Medical Robotics, L8523, 5 Hwarang-ro 14-gil, Seongbuk-gu, Seoul 02792

Tel: +82-2-958-5361
E-mail: slim@kist.re.kr

SUMMARY

Research engineer with 10+ years of extensive research experiences in the field of Computer-Assisted Interventions; developed multiple surgical navigations and image-guided medical robots, where some of the technologies were successfully transferred to industry. Expert in object-oriented programming and algorithm designing with proven track record of developing numerous programs in C/C++ environment.

## EDUCATION

**Johns Hopkins University, Baltimore, MD, USA**   Sep. 2014 – Aug. 2019
**Ph.D., M.S., Department of Mechanical Engineering**
- Major: Medical Robotics
- Thesis title: *Image-Guided Robotic Interventions for Core Needle Biopsy*
- Advisor: Prof. Dan Stoianovici
- Thesis Committee: Prof. Gregory S. Chirikjian, Prof. Russell H. Taylor
- Lab: Urology Robotics Laboratory (http://urobotics.urology.jhu.edu/)

**University of Tokyo, Tokyo, Japan**   Apr. 2008 – Mar. 2010
**M.S., Department of Bioengineering**
- Major: Surgical Navigation
- Thesis title: *Assessment for the Feasibility of External-Fixation Pin Guidance using Laser Beam*
- Advisor: Prof. Yoshikazu Nakajima
- Lab: Medical Imaging and Information Science Laboratory

**Yokohama National University, Yokohama, Japan**   Apr. 2004 – Mar. 2008
**B.S., Department of Mechanical Engineering and Materials Science**
- Korea-Japan joint government scholarship program
- Thesis title: *A Study on the Method of Detecting Driver's Inattention Blindness*
- Advisor: Prof. Hajime Takada
- Lab: Ergonomics and Vibration Engineering Laboratory

## FELLOWSHIPS, HONORS, AND AWARDS

FELLOWSHIPS AND AWARDS

- **Top 10 Abstract Awards**   May 2019, May 2018, May 2017 May 2016, May 2015
  *Selected for the top 10 conference abstracts*
  *30th, 31st, 32nd, 33rd, 34th Annual Meetings of Engineering and Urology Society (EUS)*
- **Research Assistantship**   Sep. 2014 – Aug. 2019
  *Full financial support (full tuition, stipend, and health insurance)*
  *Johns Hopkins University, MD, USA*
- **Excellent Presentation Award**   Jul. 2013
  *DGIST summer school for medical robot*
  *Instructor: **Prof. Russell H. Taylor**, Johns Hopkins University*
- **Appreciation Plaque**   Sep. 2012
  *Korea International Cooperation Agency (KOICA), South Korea*
- **Outstanding Contribution Award**   Jul. 2012
  *Gondar Polytechnic College, Ethiopia*
- **International Cooperative Personnel Grant**   Mar. 2010 – Sep. 2012
  *Korean oversea volunteer program, dispatched 100 selective personnel*
  *Korea International Cooperation Agency (KOICA), South Korea*
- **Tuition Waiver**   Apr. 2008 – Mar. 2010
  *University of Tokyo, Japan*
- **Fellowship Grant**   Apr. 2008 – Mar. 2010
  *Stipend, LG electronics, South Korea*
- **Merit Based Scholarship**   Oct. 2008 – Mar. 2010
  *Stipend, East Asian Circle of Applied Technology (EACAT) Foundation, Japan*
- **Merit Based Scholarship**   Apr. 2008 – Mar. 2009
  *Stipend, Hakumon Scholarship Foundation, Japan*

- **National Fellowship Grant**                                                    Mar. 2003 – Mar. 2008
  *Korea-Japan joint government scholarship program*
  *5-year full tuition and stipend, granted 100 selective students every year*

PUBLICATIONS    JOURNAL PAPERS

- K. Koo, T. Aro, R. Becker, <u>**S. Lim**</u>, J. Winoker, D. Petrisor, D. Stoianovici, B. Matlaga, "Integrated, Real-Time Digital Measurement during Ureteroscopic Procedures for Nephrolithiasis: A Workflow Feasibility Study," *Journal of Endourology*, in press (2020)
- T. Aro, <u>**S. Lim**</u>, D. Petrisor, K. Koo, B. Matlaga, D. Stoianovici, "Personalized Renal Collecting System Mockup for Procedural Training under Ultrasound Guidance," *Journal of Endourology*, vol. 34, no. 5, pp. 619-623 (2020)
- <u>**S. Lim**</u>, C. Jun, D. Chang, D. Petrisor, M. Han, D. Stoianovici, "Robotic Transrectal Ultrasound-Guided Prostate Biopsy," *IEEE Trans. Biomed. Eng. (TBME)*, vol. 66, no. 9, pp. 2527-2537, (2019) (*Selected for the cover article*).
- <u>**S. Lim**</u>*, K. Sharma*, P. Li, D. Petrisor, S. Fricke, D. Stoianovici, K. Cleary, "Robotically Assisted Long Bone Biopsy under MRI: Cadaver Study Results," *Int. J. Comput. Assist. Radiol. Surg.(IJCARS)*, vol. 14, no. 1, pp. 147-156 (2019) (* *indicates co-first authorship*).
- C. Jun, <u>**S. Lim**</u>, D. Petrisor, G. Chirikjian, J. Kim, D. Stoianovici, "A Simple Insertion Technique to Reduce the Bending of Thin Bevel-Point Needles," *Minimally Invasive Therapy & Allied Technologies (MITAT)*, vol. 28, no. 4, pp. 199-205 (2019).
- C. Jun*, <u>**S. Lim**</u>*, J. Wolinsky*, T. Garzon-Muvdi, D. Petrisor, K. Cleary, D. Stoianovici, "MR Safe Robot Assisted Needle Access of the Brain: Preclinical Study," *J. Medical Robotics Research (JMRR)*, vol. 3, no. 1, pp. 1-11 (2018) (* *indicates co-first authorship*).
- W. Ludwig, <u>**S. Lim**</u>, D. Stoianovici, B. Matlaga, "Endoscopic Stone Measurement During Ureteroscopy," *Journal of Endourology*, vol. 32, no. 1, pp. 34-39 (2018) (*Selected for the cover article*).
- K. Cleary, <u>**S. Lim**</u>, C. Jun, R. Monfaredi, K. Sharma, S. Fricke, L. Vargus, D. Petrisor, D. Stoianovici, "Robotically Assisted Long Bone Biopsy under MRI Imaging: Workflow and Phantom Study," *Academic Radiology*, vol. 25, no. 1, pp. 74-81 (2018).
- D. Stoianovici, C. Jun, <u>**S. Lim**</u>, P. Li, D. Petrisor, S. Fricke, K. Sharma, K. Cleary, "Multi-Imager Compatible, MR Safe, Remote Center of Motion Needle-Guide Robot," *IEEE Trans. Biomed. Eng. (TBME)*, vol. 65, no. 1, pp. 165-177 (2018).
- D. Stoianovici, C. Kim, D. Petrisor, C. Jun, <u>**S. Lim**</u>, M. Ball, A. Ross, K. Macura, M. Allaf, "MR Safe Robot, FDA Clearance, Safety and Feasibility Prostate Biopsy Clinical Trial," *IEEE Trans. Mechatronics (TMECH)*, vol. 22, no. 1, pp. 115-126 (2017).
- E. Toom, M. Gorin, J. Verdone, C. Jun, D. Petrisor, <u>**S. Lim**</u>, J. Rosette, T. Reijke, K. Pienta, D. Stoianovici, "A Surface Tension Magnetophoretic Device for Rare Cell Isolation and Characterization," *Medical Oncology*, vol. 34, no. 2, pp. 22 (2017).
- S. Park, S. Moon, B. Lee, S. Park, Y. Kim, D. Lee, <u>**S. Lim**</u>, J. Wang, "Arthroscopically Blind Anatomical Anterior Cruciate Ligament Reconstruction using Only Navigation Guidance: a cadaveric study," *The Knee*, vol. 23, no. 5, pp. 813-819 (2016).
- Y. Nakajima, T. Sasama, Y. Momoi, N. Sugano, Y. Tamura, T. Dohi, <u>**S. Lim**</u>, I. Sakuma, M. Mitsuishi, T. Koyama, K. Yonenobu, I. Ohnishi, M. Bessho, S. Ohashi, K. Nakamura: "Surgical Tool Alignment Guidance by Drawing Two Cross-Sectional Laser-Beam Planes," *IEEE Trans. Biomed. Eng. (TBME)*, vol. 60, no. 6, pp. 1467-1476 (2013).
- <u>**S. Lim**</u>, T. Douke, S. Onogi, Y. Nakajima, M. Mitsuishi, I. Sakuma, M. Bessho, I. Ohnishi, K. Nakamura: "Assessment for the Feasibility of External-Fixation Pin Guidance Using Laser Navigation," *J. Japan Soc. Comp. Aided Surg. (J. JSCAS)*, vol. 12, no. 4, pp.511-518 (2010).

CONFERENCE ABSTRACTS

- <u>**S. Lim**</u>*, J. Ha*, D. Lee, "3D Pose and Curvature Estimation of Bendable Interventional Device using Single-view X-ray Image," *Proc. 42nd Annual Int. Conf. of the IEEE Eng. Med. Bio. Soc. (EMBC 2020)*, July, Montreal, CA (* *indicates co-first authorship*).
- <u>**S. Lim**</u>, T. Aro, K. Koo, D. Petrisor, B. Matlaga, D. Stoianovici, "Image Correction for Rigid Cystoscopy," *Proc. 34th Annual Meeting of Eng. Urol. Soc. (EUS 2019)*, May, Chicago, IL.
- T. Aro, <u>**S. Lim**</u>, D. Petrisor, K. Koo, B. Matlaga, D. Stoianovici, "Novel Renal Collecting System Model for Procedural Targeting under Ultrasound Guidance," *Proc. 34th Annual Meeting of Eng. Urol. Soc. (EUS 2019)*, May, Chicago, IL.
- K. Koo, T. Aro, <u>**S. Lim**</u>, D. Petrisor, D. Stoianovici, B. Matlaga, "Integrated, Real-Time Digital Stone Measurement in Ureteroscopic Stone Procedures: A Workflow Feasibility Study," *Proc. 114th Annual*

*Meeting of American Urological Association (AUA 2019) & Proc. 34th Annual Meeting of Eng. Urol. Soc. (EUS 2019)*, May, Chicago, IL, (*Top 10*).

- T. Aro, <u>**S. Lim**</u>, D. Petrisor, D. Stoianovici, "Can Intra-Vesicle Ultrasound Surface Mapping Replace Cystoscopy? Novel Technique and Proof of Concept," *Proc. 114th Annual Meeting of American Urological Association (AUA 2019)*.
- T. Aro, <u>**S. Lim**</u>, D. Petrisor, D. Stoianovici, "Robotic 3D Ultrasound-Guided Targeting for Percutaneous Renal Access," *Proc. 114th Annual Meeting of American Urological Association (AUA 2019) ) & Proc. 34th Annual Meeting of Eng. Urol. Soc. (EUS 2019)*, May, Chicago, IL, (*Top 10*).
- D. Stoianovici, K. Sharma, <u>**S. Lim**</u>, P. Li, D. Petrisor, S. Phillips, L. Vargas, S. Fricke, K. Cleary, "MR Safe Robot for Long Bone Biopsy: System Concept and Phantom/Cadaver Studies," *Proc. 12th Interventional MRI Symposium (iMRI 2018)*, Oct., Boston, MA.
- <u>**S. Lim**</u>, D. Chang, C. Jun, D. Petrisor, P. Li, D. Stoianovici, M. Han, "First Systematic Personalized Prostate Biopsy," *Proc. 33rd Annual Meeting of Eng. Urol. Soc. (EUS 2018)*, May, San Francisco, CA (*Top 10*).
- W. Ludwig, <u>**S. Lim**</u>, G. Joice, D. Stoianovici, B. Matlaga, "Endoscopic Stone Measurement During Ureteroscopy," *Proc. 113th Annual Meeting of American Urological Association (AUA 2018) & Proc. 33rd Annual Meeting of Eng. Urol. Soc. (EUS 2018)*, May, San Francisco, CA.
- G. Joice, <u>**S. Lim**</u>, W. Ludwig, M. Gorin, D. Stoianovici, B. Matlaga, "Clinical Utility of Endoscopic Stone Measurement," *Proc. 33rd Annual Meeting of Eng. Urol. Soc. (EUS 2018)*, May, San Francisco, CA.
- P. Li, W. Ludwig, J. Ziemba, R. Gurnani, <u>**S. Lim**</u>, C. Jun, S. Kawamoto, G. Fung, D. Stoianovici, B. Matlaga, "Semi-Automatic Measurements of Urinary Stone Parameters, and Distance to Skin," *Proc. 33rd Annual Meeting of Eng. Urol. Soc. (EUS 2018)*, May, San Francisco, CA.
- <u>**S. Lim**</u>, C. Jun, D. Petrisor, P. Li, S. Rowe, M. Allaf, D. Stoianovici, M. Gorin, "Development of Software to Overlay Imaging Data in Real Time onto The Intraoperative View During Robotic Surgery," *Proc. 32nd Annual Meeting of Eng. Urol. Soc. (EUS 2017)*, May, Boston, MA (*Top 10*).
- M. Han, <u>**S. Lim**</u>, C. Jun, D. Petrisor, D. Stoianovici, "TRUS Robot-Assisted Prostate Biopsy: A Feasibility Study," *Proc. 112th Annual Meeting of American Urological Association (AUA 2017) & Proc. 32nd Annual Meeting of Eng. Urol. Soc. (EUS 2017)*, May, Boston, MA (*Top 10*).
- W. Ludwig, C. Jun, <u>**S. Lim**</u>, M. Gorin, J. Ziemba, P. Pierorazio, D. Stoianovici, M. Allaf, "Percutaneous Renal Access Using Robotic 3D Ultrasound and Targeting," *Proc. 32nd Annual Meeting of Eng. Urol. Soc. (EUS 2017)*, May, Boston, MA.
- W. Ludwig, P. Li, J. Ziemba, R. Gurnani, <u>**S. Lim**</u>, C. Jun, S. Kawamoto, G. Fung, D. Stoianovici, B. Matlaga, "Feasibility of Automating The Measurement of Kidney Stone Diameter, Volume, and Density from CT," *Proc. 32nd Annual Meeting of Eng. Urol. Soc. (EUS 2017)*, May, Boston, MA (*Top 10*).
- K. Cleary, K. Sharma, R. Monfaredi, E. Wilson, A. Krieger, S. Fricke, <u>**S. Lim**</u>, C. Jun, D. Petrisor, D. Stoianovici, "MRI-safe robot and novel workflow for MRI-guided pediatric long bone biopsy," *Proc. 30th Comput. Assist. Radiol. Surg. (CARS2016)*, June, Heidelberg, Germany.
- D. Stoianovici, C. Jun, <u>**S. Lim**</u>, D. Petrisor, R. Monfaredi, E. Wilson, A. Krieger, S. Fricker, K. Sharma, K. Cleary, "MR Safe Remote Center of Motion Needle-guide Robot," *Proc. 31st Annual Meeting of Eng. Urol. Soc. (EUS 2016)*, May, San Diego, CA (*Top 10*).
- N. Ellens, D. Petrisor, C. Jun, <u>**S. Lim**</u>, K. Farahani, A. Partanen, D. Stoianovici, "Development of An Adaptive Robotic-Assisted MR-HIFU System: Pre-clinical Proof of Principle," *Proc. 31st Annual Meeting of Eng. Urol. Soc. (EUS 2016)*, May, San Diego, CA.
- D. Chang, C. Jun, C. Kim, <u>**S. Lim**</u>, D. Petrisor, D. Stoianovici, "CT-ultrasound fusion using an image-frame-image registration method," *Proc. 30th Annual Meeting of Eng. Urol. Soc. (EUS 2015)*, May, New Orleans, LA (*Top 10*).
- <u>**S. Lim**</u>, J. Choi, Y. Kim, D. Lee, S. Park, J. Wang: "Robotic Guide System for Reducing Human Alignment Error in Computer-Assisted Anterior Cruciate Ligament Reconstruction," *Proc. 28th Comput. Assist. Radiol. Surg. (CARS2014)*, June, Fukuoka, Japan.
- D. Lee, <u>**S. Lim**</u>, H. Cho, S. Shin, S. Park: "Neurosurgical Robotics Guidance System using Visual Servoing," *Proc. 10th Asian Conf. Comput. Aided Surg. (ACCAS2014)*, June, Fukuoka, Japan
- <u>**S. Lim**</u>, J. Choi, D. Lee, S. Park, S. Park, S. Moon, J. Wang: "Development of Surgical Navigation System for Anterior Cruciate Ligament Reconstruction." *Proc. Korean Soc. CAD/CAM Conf. 2014*, PyeongChang, Korea.
- S. Shin, <u>**S. Lim**</u>, H. Cho, S. Park, D. Lee: "The Needle Guide Device Calibration for Markerless ICH Surgical Robotic System," *Proc. Korean Soc. CAD/CAM Conf. 2014*, PyeongChang, S. Korea.
- <u>**S. Lim**</u>, S. Park, and D. Lee: "Non-Invasive Patient Registration Based on 3D Feature Points of Vein," *Proc. 13th Int. Conf. Control, Autom., Syst. (ICCAS 2013)*, Oct., Gwangju, S. Korea.
- O. Cha, <u>**S. Lim**</u>, and D. Lee: "A New Method for Robotic Calibration of HIFU Transducer," *Proc. 13th Int. Conf. Control, Autom., Syst. (ICCAS 2013)*, Oct., Gwangju, S. Korea.

- J. Choi, **S. Lim**, Y. Kim, D. Lee, S. Park, S. Park, and J. Wang: "3D Preoperative Surgical Planning Software for Anterior Cruciate Ligament Reconstruction," *Proc. 13th Int. Conf. Control, Autom., Syst. (ICCAS 2013)*, Oct., Gwangju, S. Korea.
- **S. Lim**, S. Park, and D. Lee: "Markerless Surgical Robotic System for Intracerebral Hemorrhage (ICH) Surgery: Tool Calibration and Its Evaluation," *Proc. 9th Asian Conf. Comput. Aided Surg. (ACCAS 2013)*, Sep., Tokyo, Japan.
- **S. Lim**, S. Park, and D. Lee: "Needle Calibration for Intracerebral Hemorrhage Surgical Robotic System," *Conf. Korean Soc. Mech. Eng. 2013*, Gunsan, S. Korea.
- **S. Lim**, T. Douke, S. Onogi, Y. Nakajima, M. Mitsuishi, I. Sakuma, M. Bessho, I. Ohnishi, K. Nakamura: "Surgical Tool Guidance Using Laser Beams for Percutaneous Puncture," *Proc. 18th Conf. Japan Soc. Comput. Aided Surg. 2009*, Tokyo, Japan.
- **S. Lim**, T. Douke, S. Onogi, Y. Nakajima, M. Mitsuishi, I. Sakuma, M. Bessho, I. Ohnishi, K. Nakamura: "External Fixator Placement Using Laser Navigation System," *Proc. 18th Conf. Japan Soc. Comput. Aided Surg. 2009*, Tokyo, Japan.

PATENTS

- D. Stoianovici, **S. Lim**, M. Han: "Device and Methods for Transrectal Ultrasound-Guided Prostate Biopsy," Application No.: 62/774,559, U.S. Patent Pending.
- D. Stoianovici, B. Matlaga, **S. Lim**, W. Ludwig: "Method of Size Measurement in Mono-Vision Scope Images," Application No.: PCT/US2018/048245, U.S. Patent Pending.
- D. Stoianovici, D. Petrisor, C. Jun, **S. Lim**: "Remote Center of Motion Robot," Application No.: 16/098,284, U.S. Patent Pending.
- D. Lee, S. Park, and **S. Lim**: "*System and method for non-invasive patient-image registration,*" U.S. Patent Issued (Patent No.: 9554117, Issue Date: 01/24/2017), South Korea Patent Issued (Patent No.: 10-1572487-00-00, Issue Data: 11/23/2015).
- D. Lee, S. Park, **S. Lim**, and S. Lee: "*Visualization apparatus for vein,*" U.S. Patent Issued (Patent No.: 9522240, Issue Date: 12/20/2016), South Korea Patent Issued (Patent No.:10-1503838-00-00, Issue Data: 03/12/2015).

ACADEMIC EXPERIENCE

RESEARCH EXPERIENCE

- "*Development of Transrectal Ultrasound-Guided Robotic Prostate Biopsy System*", participating researcher, supported by the Patrick C. Walsh Prostate Cancer Research Foundation at the Johns Hopkins Hospital, MD, USA. — 2014-2019
- "*Development of MR Safe, Remote Center of Motion Needle Guide Robot for Long Bone Biopsy*", participating researcher, supported by awards 1R01CA172244 from the National Cancer Institute, MD, and in part by RC1EB010936 from the National Institute of Biomedical Imaging and Bioengineering, MD, and award W81XWH0810221 from the Department of Defense, VA. — 2014-2018
- "*Development of a surgical planning and navigation system for anterior cruciate ligament (ACL) reconstruction*", participating researcher, supported by the Korea Institute of Science and Technology & the Samsung Medical Center, Seoul, S. Korea. — 2012-2014
- "*Development of a markerless surgical robotic system for intracerebral hemorrhage (ICH) surgery*", participating researcher, supported by the Korea Institute of Science and Technology & the Incheon St. Mary's Hospital, Seoul, S. Korea. — 2012-2014
- "*Development of a minimally invasive, high-precision fracture reduction support system*", participating researcher, supported by the University of Tokyo (Dept. of Mechanical Engineering, Prof. Mitsuishi & Prof. Sakuma) and the University of Tokyo Hospital (Dept. of Orthopedic Surgery, Prof. Ohnishi), Tokyo, Japan. — 2008-2010
- "*Establishment of an appropriate warning method through the discrimination of driver's state*", participating researcher, supported by the DENSO Co., Nagoya, Japan. — 2007-2008

TEACHING EXPERIENCE

- **Teaching Assistant**, Johns Hopkins University, Dynamics of Robots and Spacecrafts (EN530.424/EN.530.624) — Fall 2017
- **Teaching Assistant**, Johns Hopkins University, Computer Aided Design (EN.530.414) — Fall 2016
- **Instructor**, ICT department, Gondar Polytechnic College, Ethiopia. — Jul. 2010 – Jul. 2012

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|---|---|---|
| • **Teaching Assistant**, University of Tokyo, Tokyo, Japan<br>Univ. of Tokyo - Seoul National Univ. exchange lecture course,<br>Biological Reaction Engineering | Spring 2009 | |
| • **Teaching Assistant**, University of Tokyo, Tokyo, Japan<br>Univ. of Tokyo - Seoul National Univ. exchange lecture course,<br>Introduction to Bioengineering | Fall 2009 | |

WORK
EXPERIENCE

**Center for Medical Robotics, Robotics and Media Institute, Korea Institute of Science and Technology, Seoul, Republic of Korea**
*Researcher*
Sep. 2019 – Present

**Urology Robotics Laboratory, James Buchanan Brady Urological Institute, Johns Hopkins School of Medicine, MD, USA**
*Research Assistant*
Sep. 2014 – Aug. 2019

**Korea Institute of Science and Technology (KIST), Seoul, South Korea**
*Research Scientist, Center for Bionics, Biomedical Research Institute*
Oct. 2012 – Jul. 2014

**Gondar Polytechnic College, Gondar, Ethiopia**
*Instructor, ICT department, Gondar, Ethiopia*
Jul. 2010 – Jul. 2012

**TOYOTA Motors, Nagoya, Japan**
*TOYOTA Internship 2008, Division of hybrid vehicle inverter development*
Aug. 2008 – Sep. 2008

PROFESSIONAL
EXPERIENCE

- Developed a surgical planning and navigation software for TRUS-guided prostate biopsy. (written in C/C++ with MFC, MIL, VTK, ITK, GDCM, OpenCV, Eigen, and OpenMP)  2018
- Developed an endoscopic stone measurement software for ureteroscopy. (written in C/C++ with OpenCV)  2017
- Developed a stereoscopic augmented-reality software for robotic prostatectomy. (written in C/C++ with Qt, VTK, and OpenCV)  2017
- Developed a surgical planning software for direct MRI-guided long bone biopsy. (written in C/C++ with MFC, VTK, ITK, Eigen, and GDCM)  2016
- Developed a surgical navigation system for ACL reconstruction. (written in C/C++, MFC, VTK, ITK, IGSTK, and DCMTK)  2013
- Developed a simulation and control software for the markerless surgical robotic system for ICH surgery. (written in C/C++, MFC, DENSO b-Cap, VTK, ITK, and IGSTK)  2012
- Developed a surgical planning software for the reduction of fractured femurs. (written in C/C++, OpenGL, and VTK)  2009
- Developed a noncontact eye-gaze tracking system. (written in C/C++, OpenCV, and OpenGL)  2007

SKILLS

LANGUAGE

- Korean, English, and Japanese

SOFTWARE

- Programming Languages: C/C++, Python, Matlab
- Libraries: Qt, MFC, VTK, ITK, GDCM, IGSTK, OpenCV, OpenMP, CUDA, MIL, Eigen
- Applications: 3D Slicer, MS Visual Studio, Qt Creator, Eclipse, PTC Creo (Pro-E), MS Office

REFERENCES

available upon request