Sungwook Yang, Ph.D.

Principal Research Scientist

Center for Humanoid Research
Artificial Intelligence & Robotics (AIR) Institute
Korea Institute of Science and Technology (KIST)

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RESEARCH INTERESTS

- Humanoid Robot
- Dexterous Manipulation
- Robot Learning
- Robot Control
- Handheld Robot

EDUCATION

Ph. D. Robotics Institute, **Carnegie Mellon University**, Pittsburgh, U.S.A. **May 2015**
-. Advisor: Prof. Cameron N. Riviere
-. Dissertation: *Handheld Micromanipulator for Robot-Assisted Microsurgery*

M.S. Mechanical and Aerospace Engineering, **Seoul National University**, Seoul, Korea **Feb. 2006**
-. Advisor: Prof. Heui Jae Pahk
-. Thesis: *Study on Measurement of Thickness and Chromaticity for Transparent Thin Film*

B.S. Mechanical and Aerospace Engineering, **Seoul National University**, Seoul, Korea **Feb. 2004**
-. An early gradation with cum laude

EMPLOYMENT

Principal Research Scientist Center for Humanoid Research, **Mar. 2022 ~ Present**
AI·Robot Institute,
Korea Institute of Science and Technology, Seoul, Korea.

Senior Research Scientist Center for Intelligent and Interactive Robotics, **Jan. 2019 ~ Feb. 2022**
AI·Robot Institute,
Korea Institute of Science and Technology, Seoul, Korea.

Senior Research Scientist Center for BioMicrosystem, **Mar. 2016 ~ Dec. 2018**
Brain Science Institute,
Korea Institute of Science and Technology, Seoul, Korea.

Research Scientist Korea Institute of Science and Technology, **Mar. 2006 ~ Feb. 2016**
Seoul, Korea.

AWARDS AND HONORS

RED (Robot Engineering & Design) Show, Korea Robotics Society **Feb. 2024**

Best Paper Award, Korea Society of Mechanical Engineers **Apr. 2023**

Best Paper Award, Korea Society of Mechanical Engineers **Apr. 2023**

Best Paper Award, Korea Society of Mechanical Engineers **Apr. 2022**

RED (Robot Engineering & Design) Show, Korea Robotics Society **May. 2021**

Best Paper Award, Korea Society of Mechanical Engineers **Apr. 2017**

Best Paper Award, IEEE/ASME Transactions on Mechatronics (TMECH) **Jul. 2016**

Outstanding Young Scientist Award, Korea Robotics Society **Oct. 2015**

Best Application Paper Award, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2014) **Sep. 2014**

Scholarship for Honor Graduate Student, Kwanjeong Educational Foundation **Aug. 2010 ~ May 2015**

Best Paper Award, Korea Society of Mechanical Engineers **Nov. 2009**

Best Paper Award, Korea Society of Mechanical Engineers **Nov. 2008**

Best Research Team Award, Korea Institute of Science and Technology **Feb. 2008**

PROJECTS

Context-Aware and Data-Efficient Autonomous Physical Behavior Generation for Humanoid Manipulation Intelligence ***(NRF, Project Leader)*** **Jul. 2025 ~ Dec. 2029**

Development of 3D Bioprinting Robot Pen Technology for Personalized Tissue Regeneration ***(NRF, Project Leader)*** **Apr. 2024 ~ Dec. 2028**

Development of Multi-Functional Handheld Surgical Robot for Microsurgical Treatment of Intractable Brain Tumors and System Integration ***(NRF, Project Leader)*** **Jun. 2019 ~ Dec. 2023**

ACTIVITIES

Academic Director Korea Society of Mechanical Engineers, Bio Engineering Division, **2016 ~ Present**

Associate Editor IEEE International Conference on Intelligent Robots and Systems, **2019**

Organizing Committee Korea Society of Mechanical Engineers Annual Conference, **2019**

SOCIETY MEMBERSHIPS

IEEE Robotics and Automation Society **2009 ~ Present**

IEEE Engineering in Medicine and Biology Society **2008 ~ Present**

The Korean Society of Mechanical Engineers **2008 ~ Present**

SELECTED PUBLICATIONS

- H. Lee and **S. Yang**, Real-Time SLAM-Guided Closed-Loop Photodynamic Therapy with Pixel-Accurate Light-Dose Control," *IEEE Robot. Autom. Lett.*, 2026. (*in press*)
- **S. Yang**, S. Kim. U. Park, et al., "Quantitatively controlled and measured-traumatic brain injury impairs adult neurogenesis and alters neuropathological signatures in mice," *Theranostics*, vol.16, no.1, pp.193-219, 2026. ***(Front Cover, IF13.3, JCR3.3)***
- I. Choi, E. Kim, **S. Yang**, "A hybrid vision/force control strategy for handheld robotic devices enhancing probe-based confocal laser endomicroscopy," in *Proc. IEEE/RSJ Int. Conf. Intell. Robot. Syst.* (IROS), 2024.
- E. Kim, S. Kim, M. Choi, T. Seo, and **S. Yang**, "Honeycomb artifact removal using convolutional neural network for fiber bundle imaging," *Sensors*, vol.23, no. 1, pp. 333, 2023.
- G. Hwang, J. Lee, and **S. Yang**, "Visual servo control of COVID-19 nasopharyngeal swab sampling robot," in *Proc. IEEE/RSJ Int. Conf. Intell. Robot. Syst.* (IROS), 2022, pp. 1855-1861.
- J. Lee and **S. Yang**, "Fiber-bragg-grating based force sensor with dual structure for minimally invasive surgery" in *Proc. IEEE Int. Conf. Biomed. Robot.,* (BioRob), 2022, pp. 1-6.
- J. Lee, J. Kim, S. Park, D. Hwang, and **S. Yang**, "Soft robotic palm with tunable stiffness using dual-layered particle jamming mechanism," *IEEE /ASME Trans. Mechatronics*, vol.26, no. 4, pp. 1820-1827, 2021.
- E. Kim, I. Choi, and **S. Yang**, "Design and control of fully handheld microsurgical robot for active tremor cancellation," in *Proc. IEEE Int. Conf. Robot. Autom. (ICRA)*, 2021, pp. 1228-1229.
- D. Yoon, E. Kim, I. Choi, S. W. Han, **S. Yang** (Co-*Corr.*), "Prediction of voluntary motion using decomposition-and-ensemble framework with deep neural networks," *IEEE Access*, vol.8, pp. 201555-201565, 2020.
- M. Jang, J. S. Kim, S. H. Um, **S. Yang** (C*o-Corr*.), J. Kim, "Ultra-high curvature sensors for multi-bend structures using fiber Bragg gratings", *Opt. Express*, vol. 27, no. 3, pp. 2074-2084, 2019.
- **S. Yang**, J. N. Martel, L. A. Lobes Jr., and C. N. Riviere, "Techniques for robot-aided intraocular surgery using monocular vision", *Int. J. Robot. Res.*, vol. 37, no. 8, pp. 931-952, 2018.
- S. Mukherjee, **S. Yang**, R. A. MacLachlan, L. A. Lobes Jr., J. N. Martel, and C. N. Riviere, "Toward monocular camera-guided retinal vein cannulation with an actively stabilized handheld robot," in *Proc. IEEE Int. Conf. Robot. Autom. (ICRA)*, 2017, pp. 2951-2956.
- **S. Yang**, R. A. MacLachlan, J. N. Martel, L. A. Lobes Jr., and C. N. Riviere, "Comparative evaluation of handheld robot-aided intraocular laser surgery," *IEEE Trans. Robot*., vol. 32, no. 1, pp. 246-251, 2016.
- **S. Yang**, L. A. Lobes Jr., J. N. Martel, and C. N. Riviere, "Handheld automated microsurgical instrumentation for intraocular laser surgery*," Lasers Surg. Med*., vol. 47, no. 8, pp. 658-668, 2015.
- **S. Yang**, R. A. MacLachlan, and C. N. Riviere, "Manipulator design and operation for a six-degree-of-freedom handheld tremor-canceling microsurgical instrument," *IEEE /ASME Trans. Mechatronics*, vol. 20, no. 2, pp. 761–772, 2015. ***(Awarded for TMECH 2016 Best Paper)***
- S. Yang, R. A. MacLachlan, and C. N. Riviere, "Toward automated intraocular laser surgery using a handheld micromanipulator," in *Proc. IEEE/RSJ Int. Conf. Intell. Robot. Syst. (IROS)*, 2014, pp. 1302–1307. (***Awarded for IROS2014 Best Application Paper***)
- **S. Yang**, R. A. MacLachlan, and C. N. Riviere, "Design and analysis of 6 DOF handheld micromanipulator," in *Proc. IEEE Int. Conf. Robot. Autom. (ICRA)*, 2012, pp. 1946–1951.
- **S. Yang**, S. Lee, K. Park, J. Kim, Y. Huh, E. S. Yoon, and H. S. Shin, "Feedback controlled piezo-motor microdrive for accurate electrode positioning in chronic single unit recording in behaving mice," *J. Neurosci. Methods*, vol. 195, no. 2, pp. 117–127, 2011.
- H. M. Kim, S. Yang (***co-first author***), J. Kim, S. Park, J. H. Cho, J. Y. Park, T. S. Kim, E. S. Yoon, S. Y. Song, and S. Bang, "Active locomotion of a paddling-based capsule endoscope in an in vitro and in vivo experiment," *Gastrointest. Endosc*., vol. 72, no. 2, pp. 381–387, 2010. ***(Front Cover)***

PATENTS

- **S. Yang**, S. H. Heo, “Method and device for generating motion of robotics hand,”, KR10-2025-0170398 (application), US19/402417 (application), PCT/KR2026/001343.
- **S. Yang,** H. Lee, “Precise accumulated light dose control method and device in photo-treatment,” KR10-2024-0021038 (application).
- **S. Yang,** J. Kim, M. Choi, K. Chong, “Real-time photo-diagnosis and treatment device and method,” KR10-2023-0118476 (application), US18/435152 (application), PCT/KR2024/00817.
- **S. Yang**, G. Hwang and J. Lee, “Method and apparatus for collecting specimen using vision-based control,” **KR10-2801294 (grant)**, PCT/KR2023/01096.
- **S. Yang** and E. Kim, "Method and apparatus for removing honeycomb artifacts from optical fiber bundle images based on artificial intelligence," **KR10-2553001 (grant)**, **US1228031 (grant)**.
- M. Choi, S. Kim, **S. Yang**, and K. Chung, "Patterned photostimulation device and method," **KR10-2811414 (grant)**, US18/697216(application), EP22846611.9 (application), PCT/KR2022/00829.
- Y. S. Ihn, J. Lee, **S. Yang**, D. Hwang, “Surgical Forceps based on FBG with Micro Force Capability for super-microsurgery,” KR10-2864682 (grant), US 18/468,949 (application).
- Y. S. Ihn, Y. Na, D. Hwang, **S. Yang**, “Robot Wrist Mechanism Compensating Bending Radius of End Effector,” KR10-2864683 (grant), US18/468,968 (application).
- **S. Yang**, E. Kim, and I. Choi, "Handheld microsurgical robot," **KR10-2537300 (grant)**, US17/633144 (application), PCT/KR2021-01459.
- **S. Yang**, J. Lee, J. Kim, D. Hwang, and Y. S. Ihn, "Robot palm," **KR10-239609 (grant), US11992939 (grant).**
- D. Hwang, S. Park, N. Jang, Y. S. Ihn, **S. Yang**, J. Jeong, S. Yim, and S. –R. Oh, “Tele-operated forceps-driver variable stiffness master device, **KR10-2321778 (grant)**, **US11786327 (grant)**.
- D. Hwang, S. Park, N. Jang, Y. S. Ihn, J. Jeong, K. Kim, S. –R. Oh, **S. Yang**, and S. Yim, “Forceps Driver Apparatus,” **KR10-2309135 (grant)**, **US11911060 (grant)**.
- D. Hwang, N. Jang, Y. S. Ihn, **S. Yang**, J. Jeong, S. Yim, K. Kim, and S. –R. Oh, “Peripheral Nerve Gripping Apparatus,” **KR10-2174354 (grant)**.
- **S. Yang**, E. S. Yoon, R. Hoon, and H, Im, “Supporting structure applying gravity compensation mechanism and impact control system having the supporting structure,” **KR10-1991414 (grant), US11395605 (grant)**
- J. Kim, **S. Yang**, M. S. Jang, J. S. Kim, K. Kang, and B. J. You, “FBG-based torsion sensor device,” **KR10-2136625 (grant)**, **EU3822606 (grant)**, **US11486777 (grant)**, **ZL20190056511(grant)**, **JP7167297 (grant)**.
- **S. Yang**, E. S. Yoon, R. Hoon, and H, Im, “Quantitative impact control and measurement system,” **KR10-2059119 (grant), US11054323 (grant)**.
- J. S. Kim, H. J. Shin, B. J, You, **S. Yang**, “Motion capture system using a FBG sensor,” **KR10-1862131 (grant), US10524701 (grant), US11129553 (grant** .
- E. S. Yoon, **S. Yang**, J. Kim, D. M. Rho, J. Cho, and H.S. Shin, “Multi-selective micro manipulator,” **KR10-1091610 (grant), US8707809 (grant), EP2493665 (grant)**.
- E. S. Yoon, **S. Yang**, J. Kim, D. M. Rho, K. Park, S. Lee, J. Cho, and H.S. Shin, “Micro manipulator for electrode movement in neural signal recording,” **KR10-1017908 (grant), US8435250 (grant)**.
- S. H. Park, J. Kim, J. Hong, **S. Yang**, H. S. Shin, D. W. Lee, S. C. Lee, and H. S. Kim, “Polymer linear actuator for micro electro mechanical system and micro manipulator for measurement device of cranial nerve signal using the same,” **KR10-0767723 (grant), US7917200 (grant), US8774910 (grant), EP1840080 (grant)**.
- E. S. Yoon, **S. Yang**, J. Kim, K. Na, and D. M. Rho, “Bidirectional moving micro-robot system,” **KR10-1135597 (grant), US8322469 (grant), EP2542389 (grant)**.

- E. S. Yoon, **S. Yang**, J. Kim, K. Na, D. M. Rho, and S. S. Lee, "Capsule type micro-robot bidirectional moving system," **KR10-1074511 (grant), EP2498664 (grant)**.
- E. S, Yoon, J. Kim, **S. Yang**, K. Na, and S. Park, "Steering module and robot system using the same," **KR10-1012034 (grant)**.
- E. S. Yoon, **S. Yang**, J. Kim, K. Na, D. M. Rho, D. E. Kim, and Y. T. Kim, "End structure for minimizing tissue damage by contacting internal organs," **KR10-1070275 (grant)**.
- E. S. Yoon, J. Kim, **S. Yang**, K. Na, K. Y. Suh, and S. H. Lee, "Polymeric microstructure and manufacturing method useful for a foot of in-vivo moving robot," **KR 10-0997650 (grant)**.
- E. S. Yoon, J. Kim, **S. Yang**, D. E. Kim, and Y. T. Kim, "Multi-fiber frictional surface mechanism for the moving system inside living organism," **KR 10-087391 (grant)**.

PUBLICATIONS

• Journals

[1] H. Lee and **S. Yang**, Real-Time SLAM-Guided Closed-Loop Photodynamic Therapy with Pixel-Accurate Light-Dose Control," *IEEE Robot. Autom. Lett.*, 2026. (in press)

[2] **S. Yang**, S. Kim. U. Park, *et al*., "Quantitatively controlled and measured-traumatic brain injury impairs adult neurogenesis and alters neuropathological signatures in mice," *Theranostics*, vol.16, no.1, pp.193-219, 2026. ***(Front Cover)***

[3] A. Routray, C. Jaroenkunathum, **S. Yang**, *et al.*, "Magnification-Invariant Retinal Distance Estimation for Vitreoretinal Surgery Using a Laser Aiming Beam," *Int. J. Med. Robot. Comput. Assist. Surg.*, vol. 21, no.5, e70113, 2025.

[4] S. Pak, H. Ryu, S. Lim, T.-L. Nguyen, **S. Yang**, et al., "Tentonin 3 is a pore-forming subunit of a slow inactivation mechanosensitive channel," *Cell Rep.*, vol.43, no.6, 114334, 2024.

[5] H. Yoon, K. Lee, H. Shin, S. Jeong, Y. Lee, **S. Yang**, and S. Lee, "In Situ Co-transformation of Reduced Graphene Oxide Embedded in Laser-Induced Graphene and Full-Range On-Body Strain Sensor," *Adv. Funct. Mater.*, 2300322, 2023.

[6] S. Jeong, **S. Yang**, Y. Lee, and S. Lee, "Laser-induced graphene incorporated with silver nanoparticles applied for heavy metal multi-detection," *J. Mater. Chem. A*, vol. 11, no.25, pp. 13409-13418, 2023.

[7] E. Kim, S. Kim, M. Choi, T. Seo, and **S. Yang**, "Honeycomb Artifact Removal Using Convolutional Neural Network for Fiber Bundle Imaging," *Sensors*, vol.23, no. 1, pp. 333, 2023.

[8] M. W. Lee, N. Jang, N. Choi, **S. Yang**, J. Jeong, H. S. Nam, S.R. Oh, K. Kim, and D. Hwang, "In Vivo Cellular-Level 3D Imaging of Peripheral Nerves Using a Dual-Focusing Technique for Intra-Neural Interface Implantation," *Adv. Sci.*, vol. 9, no. 3, pp. 2102876, 2022.

[9] J. Lee, J. Kim, S. Park, D. Hwang, and **S. Yang**, "Soft robotic palm with tunable stiffness using dual-layered particle jamming mechanism," *IEEE /ASME Trans. Mechatronics*, vol.26, no. 4, pp. 1820-1827, 2021.

[10] D. Yoon, E. Kim, I. Choi, S. W. Han, **S. Yang**, "Prediction of voluntary motion using decomposition-and-ensemble framework with deep neural networks," *IEEE Access*, vol.8, pp. 201555-201565, 2020.

[11] N. Jang, Y. S. Ihn, N. Choi, G. Gu, J. Jeong, **S. Yang**, S. Yim, K. Kim, S. –R. Oh, and D. Hwang, "Compact and lightweight end-effectors to drive hand-operated surgical instruments for robot-assisted microsurgery," *IEEE /ASME Trans. Mechatronics*, vol. 25, no. 4, pp. 1933-1943, 2020.

[12] S. Park, N. Jang, Y. S. Ihn, **S. Yang**, J. Jeong, S. Yim, S. –R. Oh, K. Kim, D. Hwang, "A tele-operated microsurgical forceps-driver with a variable stiffness haptic feedback master device," *IEEE Robot. Autom. Lett.*, vol. 5, no. 2, pp. 1946-1953, 2020.

[13] P. Pendyala, H. N. Kim, H. S. Grewal, U. Chae, **S. Yang**, I. –J. Cho, S. Song, E. –S. Yoon, "Internal-flow-mediated, tunable one-dimensional cassie-to-wenzel wetting transition on superhydrophobic microcavity surfaces during evaporation," *Nanoscale Microscale Thermophys. Eng.*, vol. 23, no. 4, pp. 275-288, 2019.

[14] M. Jang, J. S. Kim, S. H. Um, **S. Yang (C*o-Corr.*)**, J. Kim, "Ultra-high curvature sensors for multi-bend structures using fiber Bragg gratings", *Opt. Express*, vol. 27, no. 3, pp. 2074-2084, 2019.

[15] **S. Yang**, J. N. Martel, L. A. Lobes Jr., and C. N. Riviere, "Techniques for robot-aided intraocular surgery using monocular vision", *Int. J. Robot. Res.*, vol. 37, no. 8, pp. 931-952, 2018.

[16] D. Braun, **S. Yang**, J. N. Martel, C. N. Riviere, and B. C. Becker, "EyeSLAM: Real-time simultaneous localization and mapping of retinal vessels during intraocular microsurgery," *Int. J. Med. Robot. Comput. Assist. Surg.*, vol. 14, no. 1, e1848, 2018.

[17] **S. Yang**, R. A. MacLachlan, J. N. Martel, L. A. Lobes Jr., and C. N. Riviere, "Comparative evaluation of handheld robot-aided intraocular laser surgery," *IEEE Trans. Robot.*, vol. 32, no. 1, pp. 246-251, 2016.

[18] T. Wells, **S. Yang**, R. A. MacLachlan, L. A. Louis Jr., J. N. Martel, and C. N. Riviere, "Hybrid position/force control of an active handheld micromanipulator for membrane peeling," *Int. J. Med. Robot. Comput. Assist. Surg.*, vol. 12 no. 1, pp. 85-95, 2016.

[19] **S. Yang**, L. A. Lobes Jr., J. N. Martel, and C. N. Riviere, "Handheld automated microsurgical instrumentation for intraocular laser surgery," *Lasers Surg. Med.*, vol. 47, no. 8, pp. 658-668, 2015.

[20] **S. Yang**, R. A. MacLachlan, and C. N. Riviere, "Manipulator design and operation for a six-degree-of-freedom handheld tremor-canceling microsurgical instrument," *IEEE /ASME Trans. Mechatronics*, vol. 20, no. 2, pp. 761–772, 2015. (Best Paper Award)

[21] Y. T. Kim, D. E. Kim, **S. Yang**, and E. S. Yoon, "Design of endoscopic micro-robotic end effectors: safety and performance evaluation based on physical intestinal tissue damage characteristics," *Biomed. Microdevices*, vol. 16, no. 3, pp. 397-413, 2014.

[22] **S. Yang**, S. Lee, K. Park, J. Kim, Y. Huh, E. S. Yoon, and H. S. Shin, "Feedback controlled piezo-motor microdrive for accurate electrode positioning in chronic single unit recording in behaving mice," *J. Neurosci. Methods*, vol. 195, no. 2, pp. 117–127, 2011.

[23] D. C. Pham, K. Na, S. Piao, **S. Yang**, J. Kim, and E. S. Yoon, "Hydrophobicity and micro-/nanotribological properties of polymeric nanolines," *Surf. Eng.*, vol. 27, no. 4, pp. 268–293, 2011.

[24] H. M. Kim, **S. Yang (*co-first author*)**, J. Kim, S. Park, J. H. Cho, J. Y. Park, T. S. Kim, E. S. Yoon, S. Y. Song, and S. Bang, "Active locomotion of a paddling-based capsule endoscope in an in vitro and in vivo experiment," *Gastrointest. Endosc.*, vol. 72, no. 2, pp. 381–387, 2010. ***(Front Cover)***

[25] S. H. Lee, Y. Tae. Kim, **S. Yang**, E. S. Yoon, D. E. Kim, and K. Y. Suh, "An optimal micropatterned end-effecter for enhancing frictional force on large intestinal surface, *ACS Appl. Mater. Inter.*, vol. 2, no. 5, pp. 1308–1316, 2010.

[26] T. H. Nguyen, S. M. Lee, K. Na, **S. Yang**, J. Kim, and E. S. Yoon, "An improved measurement of dsDNA elasticity using AFM, *Nanotechnology*, vol. 21, pp. 075101-1–075101-7, 2010.

[27] D. C. Pham, K. Na, **S. Yang**, J. Kim, E. S. Yoon, "Nanotribological properties of silicon nano-pillars coated by a Z-DOL lubricating film," *J. Mech. Sci. Technol.*, vol. 24, pp. 59–65, 2010.

[28] **S. Yang**, K. Park, S. S. Lee, K. Na, J. Kim, J. Choi, S. H. Park, J. Park, and E. S. Yoon, "Locomotive microrobot for capsule endoscopes", *J. Korea Robot. Soc.,* vol. 4, no. 1, pp. 62–67, 2009.

[29] D. C. Pham, K. Na, **S. Yang**, J. Kim, E. S. Yoon, "Microtribological properties of topographically-modified polymeric surfaces with different pitches, *J. Korean Phys. Soc.*, 55(4): 1416–1424, 2009.

[30] R. A. Singh, D. C. Pham, J. Kim, **S. Yang**, and E. S. Yoon, "Bio-inspired dual surface modification to improve tribological properties at small-scale," *Appl. Surf. Sci.*, vol. 255, pp. 4821–4828, 2009.

[31] J. Kim, J. Park, K. Na, **S. Yang**, J. Baek, E. S. Yoon, S. Choi, S. Lee, K. Chun, J. Park, and S. Park, "Quantitative evaluation of cardiomyocyte contractility in a 3D microenvironment," *J. Biomech.*, vol. 41, pp. 2396–2401, 2008.

[32] R. A. Singh, J. Kim, **S. Yang**, J. E. Oh, and E. S. Yoon, "Tribological properties of trichlorosilane-based one- and two-component self-assembled monolayers," *Wear*, vol. 265, pp. 42-48, 2008.

[33] J. Kim, **S. Yang**, E. S. Yoon, "Measurement of mechanical properties of cardiomyocytes using microfabricated structures," *J. Korean Soc. Precis. Eng.*, vol. 25, no. 2, pp. 15–22, 2008.

[34] J. Kim, J. Park, **S. Yang**, J. Baek, B. Kim, S. H. Lee, E. S. Yoon, K. Chun, and S. Park, "Establishment of a fabrication method for a long-term actuated hybrid cell robot," *Lab Chip*, vol. 7, pp. 1504–1508, 2007.

[35] R. A. Singh, H. J. Kim, J. Kim, **S. Yang**, H. E. Jeong, K. Y. Suh, and E. S. Yoon, "A biomimetic approach for effective reduction in micro-scale friction by direct replication of topography of natural water-repellent surfaces," *J. Mech. Sci. Techno.*, vol. 21, no. 4, pp. 624–629, 2007.

• Presentations and Conference Proceeding

- International

[1] I. Choi, E. Kim, **S. Yang**, "A hybrid vision/force control strategy for handheld robotic devices enhancing probe-based confocal laser endomicroscopy," in *Proc. IEEE/RSJ Int. Conf. Intell. Robot. Syst.* (IROS), 2024.

[2] G. Hwang, J. Lee, and **S. Yang**, "Visual servo control of COVID-19 nasopharyngeal swab sampling robot," in *Proc. IEEE/RSJ Int. Conf. Intell. Robot. Syst.* (IROS), 2022, pp. 1855-1861.

[3] J. Lee and **S. Yang**, "Fiber-bragg-grating based force sensor with dual structure for minimally invasive surgery" in *Proc. IEEE Int. Conf. Biomed. Robot.,* (BioRob), 2022, pp. 1-6.

[4] I. Choi, E. Kim, M.-T. Lim, and **S. Yang**, "Contact force control during soft tissue interaction using handheld robot" in *Proc. Int. Conf. Ubiquitous Robot.,* (UR), 2022.

[5] J. Lee and **S. Yang**, "A miniature 3-axis force sensor based on fiber bragg gratings for robotic scanning of probe-based confocal laser endomicroscopy" in *Proc. Int. Conf. Ubiquitous Robot.,* (UR), 2022.

[6] C. Park, I. Choi, J. Roh, S. Y. Lim, Yim, S.-H. Kim, J. Lee, and **S. Yang**, "Evaluation of applied force during nasopharyngeal swab sampling using handheld sensorized instrument," in *Proc. 43nd Annu. Int. Conf. IEEE Eng. Med. Biol. Soc. (EMBC)*, 2021, pp. 2207-2210.

[7] E. Kim, I. Choi, and **S. Yang**, "Design and control of fully handheld microsurgical robot for active tremor cancellation," in *Proc. IEEE Int. Conf. Robot. Autom. (ICRA)*, 2021, pp. 1228-1229.

[8] S. Yim, J. Jeong, Y. Ihn, D. Hwang, and **S. Yang**, S. –R. Oh, K. Kim, "One-step Implantation of a 3D Neural Microelectrode Array," in *Proc. 42nd Annu. Int. Conf. IEEE Eng. Med. Biol. Soc. (EMBC)*, 2020, pp. 3379-3383

[9] J. Lee, W. Hand, E. Kim, I. Choi, and **S. Yang**, "A stiffness-controlled robotic palm based on a granular jamming mechanism" in *Proc. Int. Conf. Ubiquitous Robot.,* (UR), 2020, pp. 593-596

[10] E. Kim, N. Choi, D. Hwang, Y. S. Ihn, S. -R. Oh, and **S. Yang**, "Towards active stabilization of probe-based confocal laser, in *Proc. IEEE/RSJ Int. Conf. Intell. Robot. Syst. (IROS)*, 2019.

[11] S. Park, N. Jang, J. Jeong, Y. S. Ihn, S. Yim, **S. Yang**, K. Kim, S. R. Oh., D. Hwang, "Development of a surgical-forceps driver with an embedded high-precision tiny force sensor module," in *Proc. IEEE Int. Conf. Bionic Syst.* (CBS), 2019, pp. 221-226.

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