SUDONG LEE

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EDUCATION

Ph.D. student in Robotics, Control, and Intelligent Systems (EDRS) 2023.04. - present
EPFL (Swiss Federal Institute of Technology in Lausanne) *Lausanne, Switzerland.*
Advisor: Prof. Josie Hughes

M.S. in Mechanical Engineering 2019.03. - 2021.08.
Seoul National University *Seoul, Korea.*
Advisor: Prof. Yong-Lae Park
Thesis: Modularized Robotic Skin Sensorized by Fiber Optic Force Sensing for Remote and Autonomous Robot Operation [Link]

B.S. in Mechanical Engineering 2013.03. - 2019.02.
Korea University *Seoul, Korea.*

RESEARCH EXPERIENCE

Computational Robot Design & Fabrication Laboratory (CREATE Lab)
- EPFL (École Polytechnique Fédérale de Lausanne) *Lausanne, Switzerland.*
Assistant-doctorant 2023.04. - present

Soft Robotics Research Center (SRRC)
- Seoul National University *Seoul, Korea.*
Research Associate 2022.09. - 2023.03.
Research Assistant 2021.09. - 2022.08.
Research topics:
· Fiber Jamming Actuator driven by Tendons to Enhance Adaptability
· Robotic Skin using 3-DoFs Force Sensor for Dexterous and Safe Interaction

Soft Robotics and Bionics Laboratory (SRBL)
- Mechanical Engineering, Seoul National University *Seoul, Korea.*
Graduate Student Researcher 2019.01. - 2021.08.
Research topics:
· Robotic Skin Sensorized by Fiber Optic Strain Sensors
· Multi-modal Locomotion and Environmental Adaptability of Legged Robots
· Soft Electronics and Sensors using Stretchable Materials and Sensing Mechanisms

HONORS AND AWARDS

M.S. Thesis Presentation Award 2021.06.
Mechanical Engineering, Seoul National University

Third Place Award for Locomotion Challenge 2019.04.
IEEE International Conference on Soft Robotics 2019 (RoboSoft 2019)
Team SRBL (Sudong Lee, G. Shin, J. Kim, M. Choi, Y. Baek, and Y.-L. Park)

Great Honor, Winter 2018 Graduation 2019. 02.
Korea University

Semester High Honors
Korea University
1^{st} Semester, 2013.,
2^{nd} Semester, 2013.,
1^{st} Semester, 2014.,
2^{nd} Semester, 2014.,
1^{st} Semester, 2015.,

2^{nd} Semester, 2017.,
1^{st} Semester, 2018.

SCHOLARSHIPS

Kwanjeong Fellowship — 1^{st} Semester, 2019., 2^{nd} Semester, 2019., 1^{st} Semester, 2020., 2^{nd} Semester, 2020.
Kwanjeong Educational Foundation

National Science and Engineering Scholarship — 1^{st} Semester, 2015., 2^{nd} Semester, 2017., 1^{st} Semester, 2018., 2^{nd} Semester, 2018.
Korea Student Aid Foundation

Academic Excellence Scholarship — 2^{nd} Semester, 2014.
Korea University

Best Honor Scholarship — 1^{st} Semester, 2014.
Korea University

PUBLICATIONS

Journal Papers

1. T. Kim, **Sudong Lee**, T. Hong, G. Shin, T. Kim, and Y.-L. Park, "Heterogeneous Sensing in a Multifunctional Soft Sensor for Human-Robot Interfaces," *Science Robotics*, Vol. 5, No. 49, eabc6878, 2020. *(DOI: 10.1126/scirobotics.abc6878)*
2. G. Shin*, **Sudong Lee***, and Y.-L. Park, "Selective Patterning of Conductive Elastomers Embedded with Silver Powders and Carbon Nanotubes for Stretchable Electronics," *IEEE Robotics and Automation Letters*, vol. 7, no. 2, pp. 4983-4990, 2022. *(DOI: 10.1109/LRA.2022.3153707)*
   : These authors contributed equally to this work.
3. Y. Lee, S. Lim, W. J. Song, **Sudong Lee**, S. J. Yoon, J.-M. Park, M.-G. Lee, Y.-L. Park, and J.-Y. Sun, “Triboresistive Touch Sensing: Grid-Free Touch Point Recognition Based on Monolayered Ionic Power Generators,” *Advanced Materials*, vol. 34, no. 19, 2108586, 2022. *(DOI: 10.1002/adma.202108586)*
4. T. Kim*, **Sudong Lee***, S. Chang, S. Hwang, and Y.-L. Park, "Environmental Adaptability of Legged Robots with Cutaneous Inflation and Sensation," *Advanced Intelligent Systems*, 2300172, 2023. (*DOI: 10.1002/aisy.202300172*)
   : These authors contributed equally to this paper.
5. J. Kang*, **Sudong Lee***, and Y.-L. Park, "Soft Bending Actuator with Fiber-Jamming Variable Stiffness and Fiber-Optic Proprioception." *(Accepted, IEEE Robotics and Automation Letters.)*
   : These authors contributed equally to this paper.
6. **Sudong Lee***, J. I. Kim*, Y. Baek, D. Chang, J. Lee, Y. S. Park, D. Lee, and Y.-L. Park, “Modularized Robotic Skin Sensorized by Fiber Optic Force Sensing for Remote and Autonomous Robot Operation.” *(Under review, Submitted to IEEE Transactions on Robotics.)*
   : These authors contributed equally to this work.
7. D. Kim, **Sudong Lee**, T. H. Hong, and Y.-L. Park, “Robust Online Model Identification for Versatile Robot Control Based on Self-Attention Learning.” *(Under review, Submitted to npj Robotics.)*

   In preparation - Robotic Skin using 3-DoFs Force Sensor with Soft Chamber

Conference Papers and Posters

1. G. Shin*, **Sudong Lee***, and Y.-L. Park, "Selective Patterning of Conductive Elastomers Embedded with Silver Powders and Carbon Nanotubes for Stretchable Electronics," *IEEE International Conference on Soft Robotics 2022 (Robosoft 2022)*.
   : These authors contributed equally to this work.

PATENTS

1. J. I. Kim, **Sudong Lee**, Y. Baek, and Y.-L. Park, "Modularized Robotic Skin," 2020.
   (Korea Appl. No.: 1,020,200,148,802)
2. T. Kim, **Sudong Lee**, and Y.-L. Park, "Soft Sensor with Multi-Sensing Function," 2022.
   (Korea Patent: 102,384,623)

TEACHING EXPERIENCE

M2794.001700_001: Mechanical Product Design 1^{st} Semester, 2019.
- Mechanical Engineering, Seoul National University
Teaching assistant, Instructor: Prof. Yong-Lae Park.

TECHNICAL STRENGTHS (SKILLS)

Programming Languages	C++, Python, Matlab
Embedded System	Arduino, AVR ATmega, Single-Board Computer (SBC)
Software for System and Robots	ROS, Pybullet
Machine Learning	Pytorch, TensorFlow
Design and Simulation	3D Computer-Aided Design (CAD), Finite Element Analysis (FEA) Software
Fabrication	3D Printing (Additive Manufacturing), Silicone Fabrication

OTHER EXPERIENCE

Republic of Korea Air Force (ROKAF, Military Service) 2015.08. - 2017.08.
Staff Sergeant, Honorable discharge.