SUDONG LEE

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EDUCATION

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

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

Korea University — Seoul, Korea.
B.S. in Mechanical Engineering — *2019.03. - 2021.08.*

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 — 2013 - 2018
Korea University

SCHOLARSHIPS

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

National Science and Engineering Scholarship — 1^{st} Semester, 2015., 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. **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.
5. T. Kim*, **Sudong Lee***, S. Chang, S. Hwang, Y.-L. Park, "Multi-modal Locomotion and Environmental Adaptability of Legged Robots using Soft Inflatable Sensing Skin." *(Under review, Submitted to Advanced Intelligent Systems.)*
   : These authors contributed equally to this paper.
6. J. Kang*, **Sudong Lee***, Y.-L. Park, "Soft Bending Actuator with Fiber-Jamming Variable Stiffness and Fiber-Optic Proprioception." *(Submitted to IEEE Robotics and Automation Letters.)*
   : These authors contributed equally to this paper.
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." *(Prepared to submit)*

   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.