

Seongsik PARK

PERSONAL DATA

Postdoctoral Researcher
Center for Intelligent and Interactive Robotics
Korea Institute of Science and Technology (KIST)
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RESEARCH INTERESTS

Motion recognition using sEMG

recognition of sEMG pattern and motion, motion segmentation of continuous motion, machine learning, probabilistic method, Bayesian method

Impedance programming by demonstration using sEMG

robot control using biosignal, variable stiffness control, human skill teach & transfer, programming by demonstration, human-robot interaction

EDUCATION

AUG 2019 Ph.D. in MECHANICAL ENGINEERING
MAR 2011 **Pohang University of Science and Technology (POSTECH)**, Pohang, Korea
Advisor: Prof. Wan Kyun CHUNG
GPA: 3.77/4.30

AUG 2010 B.S. in MECHANICAL AND AEROSPACE ENGINEERING
MAR 2007 **Seoul National University (SNU)**, Seoul, Korea
GPA: 3.43/4.30 standing 67/179.

RESEARCH EXPERIENCE

Current Postdoctoral Researcher in [MARCH Lab](#). | Principal Investigator: Dr. Keehoon KIM
SEP 2019 **Korea Institute of Science and Technology (KIST)**, Seoul, Korea

AUG 2019 Research Student in [MARCH Lab](#). | Principal Investigator: Dr. Keehoon KIM
APR 2016 **Korea Institute of Science and Technology (KIST)**, Seoul, Korea

AUG 2019 Research Assistant in [Robotics Lab](#). | Principal Investigator: Prof. Wan Kyun CHUNG
MAR 2011 **Pohang University of Science and Technology (POSTECH)**, Pohang, Korea

AWARDS AND HONORS

- DEC 2018 RMI Best Paper Award in *KIST Robotics and Media Institute*
- JAN 2018 Best Paper Award in *2018 13th Korea Robotics Society Annual Conference*
Seongsik Park, Woongyong Lee, Wan Kyun Chung, and Keehoon Kim, "Ball trapping: impedance programming by demonstration using sEMG."
- MAY 2013 Best Paper Award in *2013 8th Korea Robotics Society Annual Conference*
Seongsik Park, and Wan Kyun Chung, "Simulation study of planar 2-DOF arm model for velocity-dependent stiffness modulation using iLQR algorithm."
- 2007-2010 National Science and Technology Scholarship of *Korea Student Aid Foundation*

PUBLICATIONS

Journal Articles

3. Seongsik Park, Wan Kyun Chung, and Keehoon Kim, "Training-Free Bayesian Self-Adaptive Classification for sEMG Pattern Recognition Including Motion Transition," *IEEE Transactions on Biomedical Engineering* (accepted).
2. Seongsik Park, Donghyeon Lee, Wan Kyun Chung, and Keehoon Kim, "Hierarchical Motion Segmentation through sEMG for Continuous Lower Limb Motions," *IEEE Robotics and Automation Letters*, vol. 4, no. 4, pp. 4402-4409, 2019.
1. Seongsik Park, Woongyong Lee, Wan Kyun Chung, and Keehoon Kim, "Programming by Demonstration Using the Teleimpedance Control Scheme: Verification by an sEMG-Controlled Ball-Trapping Robot," *IEEE Transactions on Industrial Informatics*, vol. 15, no. 2, pp. 998-1006, 2019.

Refereed Conference Papers

9. Seongsik Park, and Wan Kyun Chung, "Localizing a needle tip using 2D microscope images and detecting vertical approach of a needle based on focus measures for intracellular microneedle insertion," in *Intelligent Robots and Systems (IROS), 2016 IEEE/RSJ International Conference on*, 2016, pp. 2567-2571.
8. Seongsik Park, and Wan Kyun Chung, "Tele-impedance control of virtual system with visual feedback to verify adaptation of unstable dynamics during reach-to-point tasks," in *Biomedical Robotics and Biomechatronics (BioRob), 2016 6th IEEE RAS/EMBS International Conference on*, 2016, pp. 1283-1289.
7. Seongsik Park, Il Hong Suh, and Wan Kyun Chung, "Dynamic motion phase segmentation using sEMG during countermovement jump based on hidden semi-Markov model," in *Robotics and Automation (ICRA), 2015 IEEE International Conference on*, 2015, pp. 1461-1467.
6. Seongsik Park, and Wan Kyun Chung, "Dynamic motion phase segmentation using electromyogram," in *Ubiquitous Robots and Ambient Intelligence (URAI), 2015 12th International Conference on*, 2015, pp. 202-203.
5. Seongsik Park, and Wan Kyun Chung, "Decoding surface electromyogram into dynamic state to extract dynamic motor control strategy of human," in *Intelligent Robots and Systems (IROS), 2014 IEEE/RSJ International Conference on*, 2014, pp. 1427-1433.
4. Seongsik Park, and Wan Kyun Chung, "Autonomous segmentation of motion primitive including muscular activation using variational Bayesian mixture of Gaussian," in *Ubiquitous Robots and Ambient Intelligence (URAI), 2013 10th International Conference on*, 2013, pp. 5-9.

3. Minjae Kim, **Seongsik Park**, and Wan Kyun Chung, "Flexible polymer-based micro needle array sEMG sensor," in *Ubiquitous Robots and Ambient Intelligence (URAI), 2013 10th International Conference on*, 2013, pp. 1-4.
2. Min Jun Kim, **Seongsik Park**, and Wan Kyun Chung, "Nonlinear robust internal loop compensator for robust control of robotic manipulators," in *Intelligent Robots and Systems (IROS), 2012 IEEE/RSJ International Conference on*, 2012, pp. 2742-2748.
1. **Seongsik Park**, and Wan Kyun Chung, "Combined method of weighted least norm and gradient projection for avoiding joint limit," in *Ubiquitous Robots and Ambient Intelligence (URAI), 2011 8th International Conference on*, 2011, pp. 798-799.

LANGUAGES, SKILLS AND ABILITIES

Languages	Korean (mothertongue) English (intermediate)
Computer Skills	MATLAB, C/C++, \LaTeX , Real-Time OS (RTX), OpenSim, Visual Studio, SolidWorks, RoboticsLab, Adobe Illustrator & Premiere
Hardware and Equipments	Manipulator (Schunk 7-DOF LWA3, Neuromeka Indy RP) sEMG sensors (Delsys, Noraxon, Thalmic MYO) Motion capture (MotionAnalysis)

INTERESTS AND ACTIVITIES

Badminton, Swimming, Photograph, Pungmul (Korean traditional music), Bicycle