

연구책임자 이력서

1. 기본정보

| | | | |
|--------|---|--------|-----------------------|
| 성명(국문) | 강 상 훈 | 성명(영문) | Sang Hoon Kang |
| 소속 | UNIST 기계공학과 | | |
| 직위 | 부교수 | 전공분야 | 로보틱스 및 재활공학 |
| 연락처 | 휴대전화 : 010-6244-1063 기타 : 052-217-2729 | 이메일 | sanghkang@unist.ac.kr |

2. 학력정보

| 기간 | 학교 | 학위명(전공분야) |
|--------------------------|-------|------------|
| 2002년 3월부터 2009년 1월까지 | KAIST | 공학박사(기계공학) |
| 2000년 3월부터 2002년 2월까지 | KAIST | 공학석사(기계공학) |
| 1996년 3월부터 2000년 2월까지 | KAIST | 공학사(기계공학) |

3. 경력정보

3-1. 근무경력 *필요한 경우 칸 추가하여 작성

| 기간 | 소속 | 직위 |
|--------------------------|---|--------------------------|
| 2015년 2월부터 현재 | UNIST, 기계항공및원자력공학부 | 조교수, 부교수 |
| 2018년 2월부터 현재 | University of Maryland, 물리치료 및 재활과학과 | 겸임조교수 |
| 2015년 4월부터 2017년 까지 | Northwestern 대학교, 재활의학과 | 겸임조교수 |
| 2010년 1월부터 2015년 1월까지 | Rehabilitation Institute of Chicago | 연구원 (Research Associate) |
| 2012년 3월부터 2013년 7월까지 | Northwestern 대학교, 의공학과 | 강사 |

2010년 6월부터
2015년 1월까지

Northwestern 대학교, 재활의학과

박사후연구원

3-2. 주요연구실적 (자유기재)

Park, S. H., Jin, M., & **Sang Hoon Kang**(Corresponding Author) (2022). Efficient Acceleration-Level Formula of Bias Acceleration Satisfying Time Precedence for Operational Space Formulation. IEEE Access.

Lee, K. W., **Sang Hoon Kang**(Corresponding Author), Lim, S.C (2022). Simple and Reliable Position Sense Assessment Under Different External Torques: Toward Developing a Post-Stroke Proprioception Evaluation Device. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 30, 823-832.

Park, S. H., Jin, M., Kang, H., & **Sang Hoon Kang**(Corresponding Author) (2021). Experimental study on a robust interaction control with unknown environments. Electronics Letters, 57(25) 964-966.

Hwang, S., Park, S. H., Jin, M., & **Sang Hoon Kang**(Corresponding Author) (2021). A robust control of robot manipulators for physical interaction: stability analysis for the interaction with unknown environments. Intelligent Service Robotics, 1-14.

Park, S. H., Son, J., Jin, M., & **Sang Hoon Kang**(Corresponding Author) (2021). Experimental verification on the robustness and stability of an interaction control: Single-degree-of-freedom robot case. Electronics Letters, 57(11) 433-435.

Kang, H., Lee, S. J., & **Sang Hoon Kang**(Corresponding Author) (2020). Stability of a robust interaction control for single-degree-of-freedom robots with unstructured environments. Intelligent Service Robotics, 13, 393-401.

Lee, S. J., Jin, D., **Sang Hoon Kang**, Gaebler-Spira, D., & Zhang, L. Q. (2019). Combined ankle/knee stretching and pivoting stepping training for children with cerebral palsy. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 27(9), 1743-1752.

Liu, J., Ren, Y., Xu, D., **Sang Hoon Kang**, & Zhang, L. Q. (2019). EMG-based real-time linear-nonlinear cascade regression decoding of shoulder, elbow, and wrist movements in able-bodied persons and stroke survivors. IEEE Transactions on Biomedical Engineering, 67(5), 1272-1281.

Sang Hoon Kang, Lee, S. J., Press, J. M., & Zhang, L. Q. (2019). Real-time three-dimensional knee moment estimation in knee osteoarthritis: toward biodynamic knee osteoarthritis evaluation and training. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 27(6), 1263-1272.

Busogi, M., Song, D., **Sang Hoon Kang**, & Kim, N. (2019). Sequence based optimization of manufacturing complexity in a mixed model assembly line. IEEE Access, 7, 22096-22106.

Jin, M., **Sang Hoon Kang**(Corresponding Author), Chang, P. H., & Lee, J. (2017). Robust control of robot manipulators using inclusive and enhanced time delay control. IEEE/ASME Transactions on Mechatronics, 22(5), 2141-2152.

J. Liu, **Sang Hoon Kang**, D. Xu, Y. Ren, S. J. Lee, & L. Q. Zhang, "EMG-based continuous and simultaneous estimation of arm kinematics in able-bodied individuals and stroke survivors," Front. Neurosci., vol.11, pp. 480, 2017.

M. Jin, **Sang Hoon Kang (Corresponding Author)**, P. H. Chang, J. Lee, "Robust control of robot manipulators using inclusive and enhanced time delay control," IEEE/ASME Trans. Mechatronics, vol. 22, pp. 2141- 2152, 2017.

M. Jin, J. Y. Lee, P.-H. Chang, M.-G. Kim, **Sang Hoon Kang** "Automatic Gain Tuning for Robust PID Control Using Time-Delay Control," IFAC-PapersOnLine, vol. 50, Issue 1, pp 4318-4323,2017.

L.-Q. Zhang, J. Son, H.-S. Park, Y. Ren, **Sang Hoon Kang**, Y. Lee "Changes of shoulder, elbow and wrist stiffness matrix post stroke," IEEE Trans. Neural Syst. Rehabil. Eng., vol. 25, pp.844-851.

K. Park, P.-H. Chang, **Sang Hoon Kang (Corresponding Author)**, "In vivo estimation of human forearm and wrist dynamic properties," IEEE Trans. Neural Syst. Rehabil. Eng., vol. 25, pp.436-446, 2017.(Featured Article: <http://tnsre.embs.org/2017/04/21/in-vivo-estimation-of-human-forearm-and-wrist-dynamic-properties>).

S. J. Lee, Y. Ren, **Sang Hoon Kang**, F. Geiger, L.-Q. Zhang, "Pivoting neuromuscular control and proprioception in females and males," Eur. J. Appl. Physiol., vol. 115, pp, 775-784, Apr., 2015

L.-Q. Zhang, K. Chen, **Sang Hoon Kang**, J. A. Sliwa, B. A. Cohen, W. Z. Rymer, L. Wang, "Characterizations of reflex and nonreflex changes in spastic multiple sclerosis," J. Neurosci. Methods, vol. 231, pp.3-8, July, 2014.

Sang Hoon Kang, S. J. Lee, L.-Q. Zhang, "Real-time tracking of knee adduction moment in patients with knee osteoarthritis," J. Neurosci. Methods, vol. 231, pp.9-17, July, 2014.

D. T. Fung, S. J. Lee, Y. Ren, **Sang Hoon Kang**, S. Q. Liu, L.-Q. Zhang, "Impingement analysis with 3-D geometric characterizations of ACL pseudofibers and intercondylar notch," J. Med. Biol. Eng., vol. 34, no.2, pp. 116-122, Apr. 2014.

Sang Hoon Kang, S. J. Lee, Y. Ren, L.-Q. Zhang, "Real-time knee adduction moment feedback training using an elliptical trainer," IEEE Trans. Neural Syst. Rehabil. Eng., vol. 22, no.2, pp. 334-343, March

2014.

Y. Ren, **Sang Hoon Kang (co-first author)**, H.-S. Park, Y.-N. Wu, L.-Q. Zhang, "Developing a multi-joint upper limb exoskeleton robot for diagnosis, therapy and outcome evaluation in neurorehabilitation," IEEE Trans. Neural Syst. Rehabil. Eng., vol. 21, no.3, pp. 490-499, May 2013.

P.H. Chang, K.B. Park, **Sang Hoon Kang**, H.I. Krebs, N. Hogan, "Stochastic estimation of human arm impedance using robots with nonlinear frictions: an experimental validation," IEEE/ASME Trans. Mechatronics, vol. 18, no.2, pp. 775-786, Apr. 2013.

D. Schwartz, **Sang Hoon Kang**, T.S. Lynch, S. Edwards, G. Nuber, L.-Q. Zhang, M. Saltzman, "The anterior deltoid's importance in reverse shoulder arthroplasty: a cadaveric biomechanical study," J. Shoulder Elbow Surg., vol.22, no.3, pp.357-364, Mar. 2013.

C.-Y. Yang, X. Guo, Y. Ren, **Sang Hoon Kang**, L.-Q. Zhang. "Position-dependent, hyperexcitable patellar reflex dynamics in chronic stroke," Arch. Phys. Med. Rehabil., vol. 94, no 2, pp. 391-400, Feb. 2013.

P.H. Chang, **Sang Hoon Kang (Corresponding Author)**, "Stochastic estimation of human arm impedance under nonlinear friction in robot joints: A model study," J. Neurosci. Methods, vol. 189, no.1, pp.97-112, May 2010.

Sang Hoon Kang (Corresponding Author), M. Jin, P.H. Chang, "A solution to the accuracy/robustness dilemma in impedance control," IEEE/ASME Trans. Mechatronics, vol.14, no.3, pp. 282-294, June 2009.

M. Jin, **Sang Hoon Kang**, P.H. Chang, "Robust compliant motion control of robot with nonlinear friction using time delay estimation", IEEE Trans. Ind. Electron., vol.55, no.1, pp. 258-269, Jan. 2008.

Z. Bien, M.J. Chung, P.H. Chang, D.S. Kwon, D.J. Kim, J.S. Han, J.H. Kim, D.H. Kim, H.S. Park, **Sang Hoon Kang**, K.B. Lee, S.C. Lim, "Integration of a rehabilitation robotic system (KARES II) with human-friendly man-machine interaction units," Auton. Robot, vol. 16, iss. 2, pp.165-191, Mar. 2004.

Sang Hoon Kang (Corresponding Author), P.H. Chang, H.S. Park, "Active compliance control for the rehabilitation robot with cable driven transmission," Trans. KSME, vol. 28, no.12, pp. 1823-1832, 2004.

S.T. Kim, P.H. Chang, **Sang Hoon Kang**, "Robust backstepping control using time delay estimation" Trans. KSME, vol. 28, no.12, pp. 1833-1844, 2004.



4. 교육이수이력정보 *생명윤리 관련 온라인 또는 오프라인 교육 사항 기재

| 일시 | 교육명 | 주관기관 |
|-------------|--|------------|
| 2021년 5월 5일 | Collaborative Institutional Training Initiative (CITI) | CITI Korea |

5. 기타(자격사항 등)

| | |
|--|--|
| | |
| | |
| | |