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Cambridge, MA 02139

Education	Harvard University Post-doctorate fellow at Micro-robotics lab	MA, USA	2008 - 2009
	Stanford University Doctorate, Department of Mechanical Engineering Thesis: <i>Bio-inspired robot design with compliant underactuated system</i> Advisor: Mark R. Cutkosky, Ph.D	CA, USA	2004 - 2008
	Stanford University Master of science, Department of Mechanical Engineering	CA, USA	2002 - 2004
	Yonsei University Bachelor of science, Mechanical Engineering	Seoul, Korea	1994 - 2001

Experience	Massachusetts Institute of Technology Associate professor in Mechanical Engineering dept. Assistant professor in Mechanical Engineering dept. Director of Biomimetic Robotics Lab		2014 - 2009 - 2014
	Post-doctorate fellow Harvard University Worked on Soft robotics project	Cambridge, MA	2008 - 2009
	Chief Technology Officer AromTech, Inc. Worked on improvement of glass manipulation with directional adhesive in LCD assembly process with LG Phillips. Developed projects with Hasbro toy company utilizing the directional adhesive	Palo Alto, CA	2007 -
	Research Assistant Stanford University Designed of bio-inspired robots: Stickybot, Spinybot, iSprawl Worked on DARPA Robots in Scansorial Environment Project	Stanford, CA	2004 - 2008
	Researcher Solutionix Inc. Developed the first prototype of 3-D scanner Created the first product for the startup company	Seoul, Korea	2000 - 2001
	Drill Instructor Military Service Trained new recruits	Nonsan, Korea	1995 - 1997

Award	Best Paper Award for the IEEE/ASME Transactions on Mechatronics	2016
	Ruth and Joel Spira Award for Distinguished Teaching	2015
	NSF Career Award	2014
	DARPA Young Investigator Award	2013
	Edgerton Career Development Chair	2010 ~ 2013
	Best Paper Award for the IEEE Transactions on Robotics, for the year 2008	2009
	Best Student Paper Award and Best Conference paper finalist for the IEEE International Conference on Robotics & Automation 2007	2007
	Selected among TIME magazine's Best Inventions of 2006	2006
	Best video Award at IEEE International Conference on Robotics and Automation	2006
	Media	The MIT Cheetah: Bio-inspired quadruped -Featured in New York Times, CNN, Time magazine, National Geographic, MIT Technology Review, and IEEE Spectrum, CBS, AP news and more than 300 other media
Stickybot : Gecko-inspired climbing robot Featured on The Discovery channel: <i>Weird Science</i> , History channel: <i>Modern Marvels- "Sticky Stuff"</i> , PBS Wired science: <i>Geek Beat</i> , ABC "Good morning America" , National Geographic- " <i>Design by Nature</i> ", Forbes magazine- " <i>7 Amazing robots that will change your life</i> " and more than 50 other media coverage: Presented at Google Zeitgeist Science Fair, DARPA Tech, American Association for the Advancement of Science Annual meeting 2007		2006
Spinybot: insect-inspired climbing robot Featured on ABC news and ARTE documentary		2006
iSprawl: Cockroach-inspired running robot Featured on Science central, ARTE documentary, DiscoveryChannel: Daily Planet		2005
Patents	1. Device and method for handling an object of interest using a directional adhesive structure in South Korea Appl. No. :10-2007-0025602, Sangbae Kim, Jin Lee	
	2. Climbing with dry adhesive : Stickybot. Patent No.: 7762362 B2, Jul. 27, 2010, Mark R Cutkosky, Sangbae Kim	
	3. Biologically inspired climbing device Patent No.: 8066088, Nov. 29, 2011, Mark R Cutkosky, Sangbae Kim, Alan Asbeck	
	4. Variably Flexible pipe and manipulator, Yong Jae KIM, Shan Bao Cheng, Sang Bae Kim, Karl Iagnemma.	
	5. Arm unit and robot having the same (US 2013-0312564 A1), Yong Jae KIM, Sang bae Kim, Shan bao Cheng, Karl Iagnemma	

**Invited talk
(2014~)**

- 50 talks (2009~ 2013)
51. "How to Learn from Biology: a New Generation of Legged Robots for Disaster Response", Invited talk at MIT Industrial Liaison Program, Cambridge, MA.
 52. "How to build robots from the lessons from animals: design challenges of the MIT Cheetah", Invited talk at Society of Integrative and Comparative Biology, 2014 Meeting, Austin TX.
 53. "How to build robots from the lessons from animals: design challenges of the MIT Cheetah", Symposium talk at American Association for the Advancement of Science (AAAS), 2014 Meeting, Chicago IL.
 54. "Bio-inspired adhesion: Stickiness Principles Learned from Geckos ", BRI Innovation Grand Rounds, Brigham and Women Hospital, Boston, MA
 55. "Learning from Nature: Future of robots", USA Science Engineering Festival, Washington DC.
 56. "Future of robots : Compliant robots inspired by nature", ROBOTS: From Imagination to Market conference, Cambridge, MA.
 57. "Learn from nature: actuation, structure and control of the MIT cheetah", LG Tech Fair, Cambridge, MA.
 58. "Learn from Nature: Innovation toward Future Robots", SBS Seoul Digital Forum, Seoul, Korea.
 59. "Learn from nature: actuation, structure and control of the MIT cheetah", Hyundai Central Research Center, Uiwang-si, Gyeonggi-do, Korea.
 60. "Learn from nature: actuation, structure and control of the MIT cheetah", LG Research and Development center, Seoul, Korea.
 61. "Learn from nature: Innovation toward future robots by principle extraction from biology", École polytechnique fédérale de Lausanne (EPFL), Lausanne, Swiss.
 62. "Learn from nature: Innovation toward future robots by principle extraction from biology", Istituto Italiano di Tecnologia (IIT), Genova, Italy.
 63. "Learning from biology: actuation and control of the MIT Cheetah", World Congress of Biomechanics, Boston, MA. 2014
 64. "Less is More: high force proprioceptive actuators, IROS Workshop, Chicago, IL, Sept. 2014.
 65. "The actuation and the control of the MIT Cheetah", Myorobotics Workshop, Cambridge, UK, Dec. 2014.
 66. "Learn from nature: Innovation Toward Future Robots", University of Tokyo, Tokyo, Japan, Jan. 2015.
 67. "Learn from nature: Innovation Toward Future Robots", MIT-TITECH Workshop, Tokyo, Japan, Jan. 2015.
 68. "Learn from nature: Innovation Toward Future Robots", Honda Corporation, Waco city, Japan, Jan. 2015
 69. "Learn from nature: Innovation Toward Future Robots", Doosan Corporation, Seoul, Korea
 70. "Learn from nature: Innovation Toward Future Robots", Hanwha Corporation, Daejeon, Korea
 71. " The MIT Cheetah: a Legged Robot for Disaster Response", invited talk at University of Michigan.
 72. March 2015, "Outpacing Evolution: MIT Cheetah Robot", 2015 MIT-ILP Europe Conference in Vienna, Austria.
 73. April. 2015, "How do we deal with impact?", NSF Workshop on Locomotion and Manipulation, Arlington, VA.
 74. April 2015,"The Robotic Cheetah: new paradigm for mobile robots", 2015 Mobile Tech, Auckland, New Zealand.
 75. April 2015,"The Robotic Cheetah: new paradigm for mobile robots", 2015 Mobile Tech, Gold Coast, Australia
 76. July 2015, "The Robotic Cheetah: new paradigm for mobile robots", MIT ILP-Epoch Taiwan Symposium, Taipei, Taiwan

77. July 2015, "The Robotic Cheetah: new paradigm for mobile robots", Agency for Defense Development, Daejeon, Korea
78. Aug. 2015, "Design of bio-inspired robots" The 11th Fab Lab Conference and Symposium, Cambridge, MA
79. Sept. 2015, "Design Paradigm Shift Toward Mobile Robots", an invited talk at University of Illinois, Urbana Champaign.
80. Sept. 2015, "Toward robust mobile robots for disaster response", Keynote talk, The International Symposium on Robotics Research, Sestri Levante, Italy.
81. Oct. 2015, "Design Paradigm Shift Toward Mobile Robots", EECS Department Colloquium Series at University of California, Berkeley.
82. Oct. 2015, "The MIT Cheetah: New Design Paradigm for Mobile Robots", Plenary Talks, The International Conference on Control, Automation, and Systems (ICCAS), Pusan, South Korea
83. Nov. 2015, "MIT Cheetah: new design paradigm shift toward mobile robots", Mechanical Engineering Colloquium Talks - Robotic Series.
84. Dec. 2015, "MIT Cheetah: new design paradigm shift toward mobile robots", WPI Robotics Colloquium talk, Worcester Polytechnic Institute
85. Jan. 2016, "MIT Cheetah: new design paradigm shift toward mobile robots", Seminar at Seoul National University, Korea
86. Jan. 2016, "Bio-inspired Mobility", GeekPark conference, Beijing, China January
87. Jan. 2016, "MIT Cheetah: bio-inspired mobile robot", Museum of Science, Boston.
88. March 2016, "Future of Humanoids", AMAZON MARS event, Palm Spring, CA March 2016
89. March 2016, "Robots in Hazardous Environments", British Consulate General RUKUS(Robotics in the UK & US) event, Boston
90. April, 2016, "MIT Cheetah: A legged Robot for Disaster Response; How Robotics Can Help to Automate Operations, Maintenance & Emergency Response in Nuclear Plants", Plenary talk at the International Congress on Advances in Nuclear Power Plants (ICAPP), 2016
91. Sept. 2016, "MIT Cheetah: New Design Paradigm for Mobile Robots", Frontiers of Engineering Symposium, Irvine, CA.

Publications

*-Selected
Journal* *Refereed*

P. Wensing, A. Wang, S. Seok, D. Otten, J. Lang and S. Kim, Proprioceptive Actuator Design: Impact Mitigation and High-Bandwidth Physical Interaction for Dynamic Legged Robots, IEEE Transactions in Robotics.

S. Seok, A. Wang, M. Chuah, D. Hyun, J. Lee, D. Otten, Design Principles for Energy Efficient Legged Locomotion and Implementation on the MIT Cheetah Robot IEEE/ASME Transactions on Mechatronics - **Best paper award**.

D. Hyun, S. Seok, J. Lee and S. Kim, High Speed Trot-running: Implementation of a Hierarchical Controller using Proprioceptive Impedance Control on the MIT Cheetah, International Journal of Robotics Research, 33(11), pp. 1417-1445, Aug. 2014.

Y. Kim, S. Cheng, S. Kim, and K. Iagnemma, A Novel Layer Jamming Mechanism with Tunable Stiffness Capability for Minimally Invasive Surgery, IEEE Transactions on Robotics ,29(4); 1031 - 1042, Aug. 2013

S. Kim, C. Lacshi and B. Trimmer, Review: Soft robotics - a new perspective in robot evolution, Trends in biotechnology, 31(5); 287-94, May 2013

E. Hawkes, B. An, N. Benbernou, H. Tanaka, S. Kim, E.D. Demaine, D. Rus, and R.J. Wood Programmable matter by folding. In Proc. of National Academic Science, 107 (28), pp. 12441-12445, 2010

Cutkosky, M.R., Kim, S. Design and fabrication of multi-material structures for bioinspired robots. Philosophical Transaction Royal Society, A, 367, 1799-1813, 2009

S. Kim, M. Spenko, S. Trujillo, B. Heyneman, D. Santos, M.R. Cutkosky. Smooth Vertical Surface Climbing with Directional Adhesion. IEEE a special issue of transactions on Bio-Robotics, 24(1):65-74, Feb 2008 – **best paper award**

D. Santos, M. Spenko, A. Parness, S. Kim, and M.R. Cutkosky. Directional Adhesion for Climbing: Theoretical and Practical Considerations. Journal of Adhesion Science and Technology, 21(12):1317-1341, 2007

*-Refereed conference
proceeding*

Park, H-W., P. M. Wensing, and S. Kim, Online Planning for Autonomous Running Jumps Over Obstacles in High-Speed Quadrupeds, Robotics: Science and Systems, 2015.

A. Wang, and S, Kim, Directional Efficiency in Geared Transmissions: Characterization of Backdrivability Towards Improved Proprioceptive Control, In Proc. of IEEE International Conference on Robotics and Automation 2015.

H. Park, S. Park, and S. Kim, Variable-speed Quadrupedal Bounding Using Impulse Planning: Untethered High-speed 3D Running of MIT Cheetah 2, In Proc. of IEEE International Conference on Robotics and Automation 2015

S. Yim, and S. Kim, Printable, Foldable, and Wearable Tele-operation Devices for Micro-robotic Application, In Proc. of IEEE International Conference on Robotics and Automation 2015

S. Seok, A. Wang, M. Chuah, D. Otten, J. Lang and S. Kim Design Principles for Highly Efficient Quadrupeds and Implementation on the MIT Cheetah Robot, In Proc. of IEEE International Conference on Robotics and Automation, Karlsruhe, pp 3307 – 3312, Germany, 2013.

G. A. Folkertsma, S. Kim, S. Stramigioli, Parallel Stiffness in a Bounding Quadruped with Flexible Spine, In Proc. of IEEE/RSJ International Conference on Intelligent Robots and Systems, pp. 2210 – 2215, Oct 2012, Vilamoura, Portugal.

S. Seok, A. Wang, D. Otten, S. Kim, Actuator Design for High Force Proprioceptive Control in Fast Legged Locomotion, In Proc. of IEEE/RSJ International Conference on Intelligent Robots and Systems, pp. 1970 – 1975, Oct 2012, Vilamoura, Portugal.

A. Ananthanarayanan, S. Foong, S. Kim, A Compact Two DOF Magneto-elastomeric Force Sensor for a Running Quadruped, IEEE International Conference on Robotics and Automation, pp. 1398 – 1403, St. Paul, MN, U.S.A, May, 2012.

S. Seok, C. Onal, R. Wood, D. Rus, and S. Kim, Peristaltic locomotion in soft robotic platform, In Proc. of IEEE International Conference on Robotics and Automation,

pp. 1228 – 1233, May 2010, Anchorage, AK.

S. Kim, M. Spenko, S. Trujillo, B. Heyneman, V. Mattoli, M.R. Cutkosky, Whole body adhesion: hierarchical, directional and distributed control of adhesive forces for a climbing robot, In Proc. of IEEE International Conference on Robotics and Automation, Rome, Italy, 10-14 April 2007, 1268-1273 - **best paper award**

S. Kim, J.E. Clark, and M.R. Cutkosky, iSprawl : Autonomy, and the Effects of Power Transmission. In Proc. CLAWAR, Madrid, Spain, Sept. 22-24, 2004.