

Curriculum Vitae

Ryuma Niiyama

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Robot Locomotion Group
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Education

- Ph.D. The University of Tokyo, Tokyo, Japan.
Graduate School of Interdisciplinary Information Studies, March 2010.
“Musculoskeletal Athlete Robot: A Biomechanical Approach”.
- B.A. The University of Tokyo, Tokyo, Japan.
Department of Mechano-Informatics, Faculty of Engineering, March 2005.
“Mowgli: A Bipedal Jumping Robot with an Artificial Musculoskeletal System”.

Awards and Honors

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| 2010–2012 | Japan Society for the Promotion of Science (JSPS)
Postdoctoral Fellow for Research Abroad |
| 2007–2009 | Japan Society for the Promotion of Science (JSPS) Research Fellow |
| 2009 | Industrial Robot Innovation Award 2009 Highly commended |
| 2008 | ASIAGRAPH 2008 in Shanghai Best Paper Award |
| 2006 | Robotics Society of Japan (RSJ) Young Investigation Excellence Award |

Publications

Journal:

Ryuma Niiyama, Satoshi Nishikawa, Yasuo Kuniyoshi, “A Biomechanical Approach to Open-loop Bipedal Running with a Musculoskeletal Athlete Robot”, *Advanced Robotics*, Vol.26, No.3–4, pp.383–398, 2012.

Alexandre Pitti, **Ryuma Niiyama**, Yasuo Kuniyoshi, “Creating and Modulating Rhythms by Controlling the Physics of the Body”, *Autonomous Robots*, Vol.28, No.3, pp.317–329, 2010.

Ryuma Niiyama, Yasuo Kuniyoshi, “Design Principle Based on Maximum Output Force Profile for a Musculoskeletal Robot”, *Industrial Robot: An International Journal*, Vol.37, No.3, pp.250–255, 2010.

Refereed Conferences and Workshops:

Satoshi Nishikawa, **Ryuma Niiyama** and Yasuo Kuniyoshi, “Running Motion in a Musculoskeletal Bipedal Robot using Muscle Activation Pattern Control Based on a Human Electromyogram”, In *Proc. 5th International Symposium on Adaptive Motion of Animals and Machines (AMAM 2011)*, pp.15–16, Hyogo, Japan, Oct. 2011.

Yasunori Yamada, Satoshi Nishikawa, Kazuya Shida, **Ryuma Niiyama**, Yasuo Kuniyoshi, “Neural-Body Coupling for Emergent Locomotion: a Musculoskeletal Quadruped Robot with Spinobulbar Model”, In *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2011)*, pp.1499–1506 (TuBT8.7), San Francisco CA, USA, Sept. 2011.

Ryuma Niiyama and Yasuo Kuniyoshi, “Enhanced Design of a Pneumatic Artificial Muscle for Musculoskeletal Robot: Super Long Stroke Pneumatic Muscle for Articular Mechanisms”, In *Proc. ICRA 2011 Workshop on Biologically-Inspired Actuation*, pp.13–14, Shanghai, China, May 2011.

Ryuma Niiyama, Satoshi Nishikawa, Yasuo Kuniyoshi, “Athlete Robot with Applied Human Muscle Activation Patterns for Bipedal Running”, In *Proc. IEEE-RAS International Conference on Humanoid Robots (Humanoids 2010)*, pp.498–503, Nashville TN, USA, Dec. 2010.

Yosuke ushigome, **Ryuma Niiyama**, Kunihiro Nishimura, Tomohiro Tanikawa, Michitaka Hirose, “Archi/e Machina: Interactive Architecture Based on Tensegrity”, In *Proc. 16th International Conference on Virtual Systems and Multimedia (VRMM 2010)*, pp.55–62, Seoul, Korea, Oct. 2010.

Kenichi Narioka, **Ryuma Niiyama**, Yoichiro Ishii and Koh Hosoda, “Pneumatic Musculoskeletal Infant Robots”, In *Proc. IROS 2009 Workshop on Synergistic Intelligence: approach to human intelligence through understanding and design of cognitive development*, pp.9–12, St. Louis MO, USA, Oct. 2009.

Ryuma Niiyama, Yasuo Kuniyoshi, “Design of a Musculoskeletal Athlete Robot: A Biomechanical Approach”, In Proc. International Conference on Climbing and Walking Robots (CLAWAR2009), pp.173–180, Istanbul, Turkey, Sept. 2009.

Ryuma Niiyama, Kei Kakitani, Yasuo Kuniyoshi, “Learning to Jump with a Musculoskeletal Robot using a Sparse Coding of Activation”, In Proc. ICRA 2009 Workshop on Approaches to Sensorimotor Learning on Humanoid Robots, pp.30–31, Kobe, Japan, May 2009.

Ryuma Niiyama, Yoichiro Kawaguchi, “Gemotion Screen: A Generative, Emotional, Interactive 3D Display”, In Proc. 2008 ASIAGRAPH in Shanghai, pp.115–120, Shanghai, China, July 2008.

Ryuma Niiyama, Yasuo Kuniyoshi, “A Pneumatic Biped with an Artificial Musculoskeletal System”, In Proc. 4th International Symposium on Adaptive Motion of Animals and Machines (AMAM 2008), pp.80–81, Cleveland OH, USA, June 2008.

Ryuma Niiyama, Akihiko Nagakubo, Yasuo Kuniyoshi, “Mowgli: A Bipedal Jumping and Landing Robot with an Artificial Musculoskeletal System”, In Proc. IEEE International Conference on Robotics and Automation (ICRA 2007), pp.2546–2551 (ThC5.2), Rome, Italy, 2007.

Other Workshops, Symposiums and Posters:

Ryuma Niiyama, Takashi Mikami, Akira Tsukimori, “Ether Synthesizer”, In Proc. Virtual Reality International Conference (VRIC 2011), Laval, France, April 2011.

Ryuma Niiyama, Tomohiro Akagawa, “Good-bye feet!”, In Proc. Virtual Reality International Conference 2009 (VRIC 2009), pp.393–396, Laval, France, April 2009.

Ryuma Niiyama, Yasuo Kuniyoshi, “Design and Control of a Musculoskeletal Robot: Biomechanical Approach”, In Proc. International Workshop on Robotics for Young Researchers, Boston MA, USA, March 2009.

Ryuma Niiyama, Yasuo Kuniyoshi, “Artificial Musculoskeletal System for Bio-Inspired Robot”, In Proc. Ars Electronica Campus Exhibition's International Conference - Crossing the Boundary Between Art and Technology, Linz, Austria, Sept. 2008.

Ryuma Niiyama, Yasuo Kuniyoshi, “Pneumatic Bipedal Robot: A Biomechanical Approach”, In Proc. 4th International Conference on Dynamic Walking 2008 (DW 2008), Delft, Netherlands, May 2008.

Ryuma Niiyama, Akihiko Nagakubo, Yasuo Kuniyoshi, “Mowgli: A Bipedal Jumping and Landing Robot with an Artificial Musculoskeletal System”, In Proc. International Workshop on Legged Locomotion for Young Researchers, Boston MA, USA, 2007.

Exhibitions

"H2H Sensor":

Marika Hayashi, **Ryuma Niiyama**, Takashi Mikami, Akira Tsukimori,
Hironori Mizoguchi, "Ether Inductor", Ars Electronica Festival 2011,
Linz, Austria, Sept. 2011.

roomoot, "Ether Synthesizer", Laval Virtual ReVolution 2011, Laval,
France, April 2011.

Marika Hayashi, **Ryuma Niiyama**, Akira Tsukimori, "Haptic Nature",
Electrofringe 2010, Newcastle, Australia, Oct. 2010.



"Archi/e Machina":

Yosuke Ushigome, **Ryuma Niiyama**, "Archi/e Machina", Cyber Arts Japan:
Ars Electronica - 30 years for Art and Media Technology, Museum
of Contemporary Art Tokyo, Tokyo, Japan, Feb. 2010.

Yosuke Ushigome, **Ryuma Niiyama**, "Archi/e Machina", iii Exhibition 11,
Tokyo, Japan, Dec. 2009.

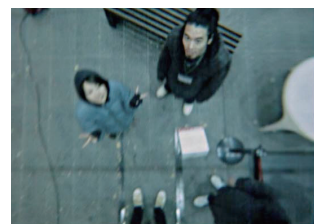
Yosuke Ushigome, **Ryuma Niiyama**, "Archi/e Machina", Digital Public Art
Exhibition: Air Harbor, Haneda Airport, Tokyo, Japan, Oct. 2009.



"Good-bye, feet!":

Ryuma Niiyama, Tomohiro Akagawa, "Good-bye, feet!", Laval Virtual
ReVolution 2009, Laval, France, April 2009.

Ryuma Niiyama, Tomohiro Akagawa, "Good-bye, feet!", iii Exhibition 10,
Tokyo, Japan, Dec. 2008.



“Bionic Engine”:

Ryuma Niiyama, “Bionic Engine”, Ars Electronica Campus Exhibition - Hybrid Ego, Linz, Austria, Sept. 2008.

Ryuma Niiyama, “Bionic Engine”, iii Exhibition 9, Tokyo, Japan, June 2008.

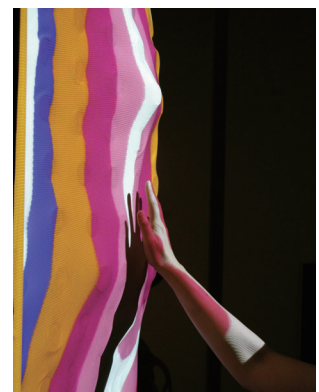


“Gemotional Screen”:

Yoichiro Kawaguchi, “Gemotion Display”, Ars Electronica Festival 2009, Linz, Austria, Sept. 2009.

Yoichiro Kawaguchi, Takahiro Harada, Tsuruoka Shuhei, “Hydrodynamics Ocean”, SIGGRAPH 2007 Art Gallery, San Diego CA, USA, Aug. 2007.

Yoichiro Kawaguchi, **Ryuma Niiyama**, Mariko Fujita, Akihiko Miyadera, Masayuki Takagi, “Gemotional Bumpy Screen”, SIGGRAPH 2006 Art Gallery, Boston MA, USA, July 2006.



Other Works:

Ryuma Niiyama, “Air Robot”, iii Exhibition 4, Tokyo, Japan, Dec. 2005.

References

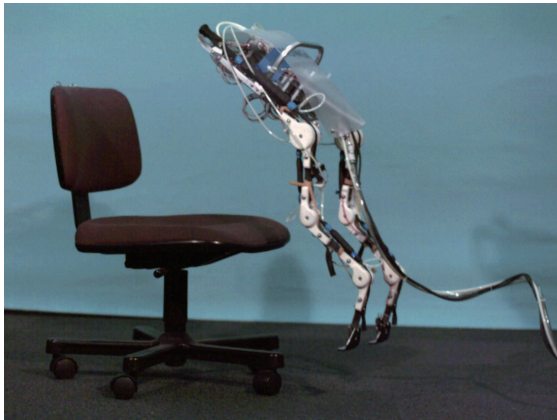
Dr. Yasuo Kuniyoshi

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Graduate School of Information Science and Technology, The University of Tokyo
Engineering Bld.2, 7-3-1 Hongo, Bunkyo-Ku, Tokyo, Japan.
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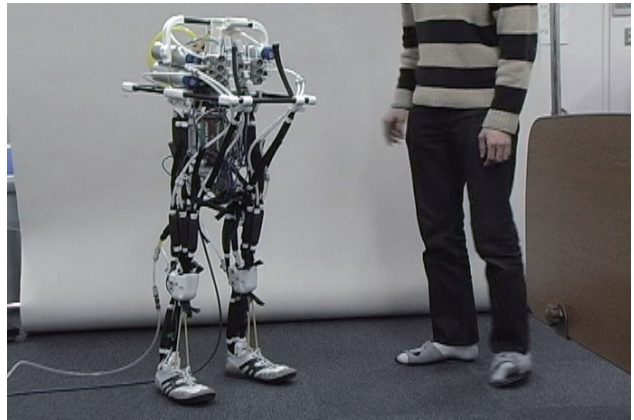
Dr. Russ Tedrake

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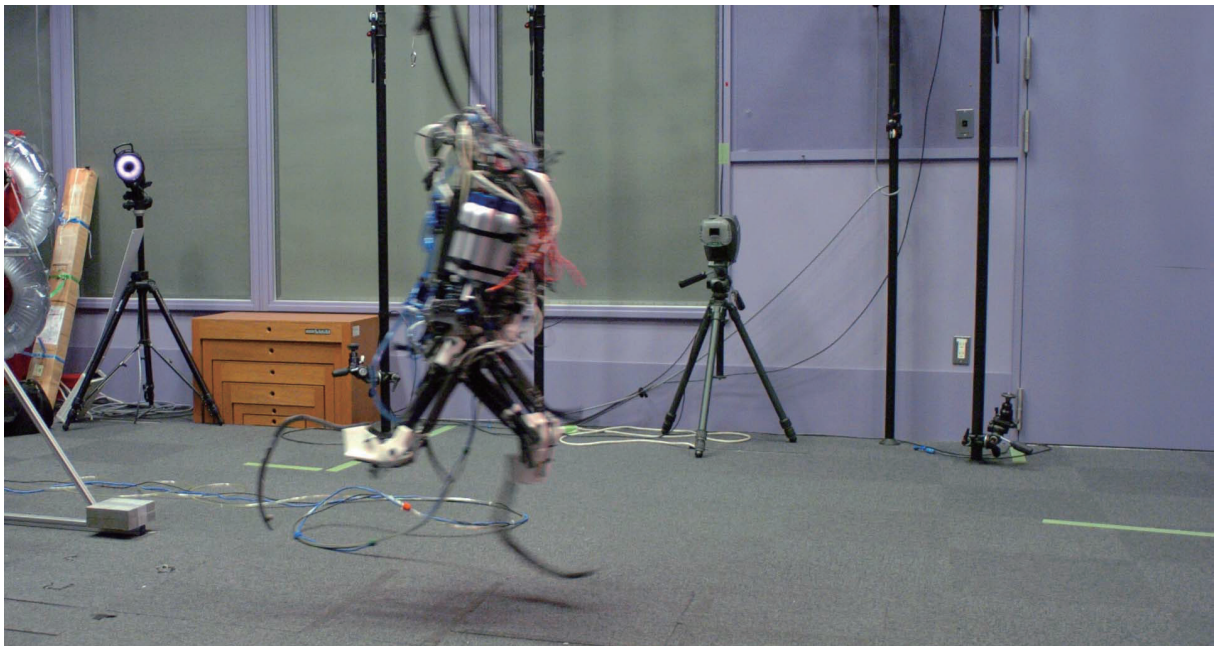
Robots



Mowgli



Athlete Robot Prototype



Athlete Robot