

Manabu Nishiura
543, Kirigabora, Nishihirose-echo, Toyota, Aichi, 470-0309 Japan
mobile:+81-90-6393-0611 email:manabu_nishiura@mail.toyota.co.jp
manabu.nishiura@toyota.global

WORK EXPERIENCE

Toyota Motor Corporation,

Robotics Researcher

Aichi, Japan

April 2021 - present

Searching for hardware that can perform tasks involving environmental contact in the same environment and at the same speed as humans, and studying its learning-based control.

JSK Robotics Laboratory,

Technical Assistant

Tokyo Japan

November 2019 - March 2021

Did research on driving cars by musculoskeletal humanoid Musashi. This is the joint research with the Toyota Motor Corporation. I was designing the musculoskeletal legs and mainly its controller that can achieve motion with environmental contact. One of the main results is pedal switching motion by its single leg like human beings. Our musculoskeletal legs can maintain the sufficient moment arm in a wide range of motion by its planar interskeletal structures. These human mimetic structures enabled high torque performance in a wide range of motion.

Preferred Networks Inc,

Research Intern, Part-time Engineer

Tokyo Japan

August 2017 - March 2019

- Replicated the result of recent papers in the field of deep reinforcement learning. Through this project, I experienced the re-implementation of recent deep reinforcement learning algorithms and acquired practical knowledge of deep reinforcement learning. (Research Intern) (summary of result: <https://research.preferred.jp/2018/06/replication-of-emergence-of-locomotion-behaviors-in-rich-environment/>)
- Worked on the Sim-to-Real Problem (which tries to narrow the gap between real robots and physics simulators). Through this project, I acquired practical experiences of executing policies trained in physics simulators on real robots. (Part-time Engineer)

EDUCATION

The University of Tokyo

Master's degree in Interdisciplinary Information Studies

Tokyo Japan

April 2019 - March 2021

Research theme: Learning-based whole-body control of musculoskeletal humanoids which has an impact absorption mechanism

The University of Tokyo

Bachelor of Engineering

Tokyo Japan

April 2013 - March 2019

Research theme of graduate thesis : A multi-scale model for population burst of neurons on microelectrode array

SKILLS

Programming Language - C++, C, Python, Lisp(EusLisp)

Framework - ROS, Chainer, Chainerrl, Tensorflow, Pytorch, Mujoco, Drake

Language - Japanese(native), English(TOEIC 910), Chinese(Beginner)

PUBLICATION

- International Conference(Peer Reviewed)
 - **Manabu Nishiura**, Akira Hanano, Kazutoshi Nishii, Yoshihiro Okumatsu, “Development of Low-inertia Backdrivable Arm Focusing on Learning-based Control,” to be presented at IEEE RAS International Conference on Intelligent Robots and Systems 2022 (**IROS2022**).
 - Moritaka Onitsuka, **Manabu Nishiura**, Kento Kawaharazuka, Kei, Tsuzuki, Yasunori Toshimitsu, Yusuke Omura, Yuki Asano, Kei, Okada, Koji Kawasaki, Masayuki Inaba, “Development of Musculoskeletal Legs with Planar Interskeletal Structures to Realize Human Comparable Moving Function,”, The 2020 IEEE-RAS International Conference on Humanoid Robots (**HUMANOIDS2020**).
 - Kento Kawaharazuka, **Manabu Nishiura**, Yuya Koga, Yusuke Omura, Yasunori Toshimitsu, Yuki Asano, Kei Okada, Koji Kawasaki, Masayuki Inaba, “Automatic Grouping of Redundant Sensors and Actuators Using Functional and Spatial Connections: Application to Muscle Grouping for Musculoskeletal Humanoids.” **IEEE Robotics and Automation Letters**.
 - Kento Kawaharazuka, **Manabu Nishiura**, Shinsuke Nakashima, Yasunori Toshimitsu, Yusuke Omura, Yuya Koga, Yuki Asano, Kei Okada, Koji Kawasaki, Masayuki Inaba, “Stability Recognition with Active Vibration for Bracing Behaviors and Motion Extensions Using Environment in Musculoskeletal Humanoids.”, Proceedings of the 2021 IEEE International Conference on Soft Robotics (**SOFTROBOTS2021**).
 - Y. Toshimitsu, K. Kawaharazuka, **M. Nishiura**, Y. Koga, Y. Omura, Y. Asano, K. Okada, K. Kawasaki, and M. Inaba, “Biomimetic Operational Space Control for Musculoskeletal Humanoid Optimizing Across Muscle Activation and Joint Nullspace.”, 2021 International Conference on Robotics and Automation (**ICRA 2021**).

AWARDS

- IEEE/RAS International Conference on Humanoid Robots(**HUMANOIDS2020**), **Best Oral Paper Award**.
- International Genetically Engineered Machine(**iGEM**) 2014, **Gold Model** as UTokyo-Team.