Tao Sun

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Education

Nanjing University of Aeronautics and Astronautics — Nanjing, China
PhD of Machine design and theory — *Apr. 2016 – Present*

Nanjing University of Aeronautics and Astronautics — Nanjing, China
Master of Machine design and theory — *Sep. 2014 – Sep. 2016*

Anhui Polytechnic University — Wuhu, China
Bachelor of Process Equipment and Control Engineering — *Sep. 2010 – May 2014*

Experience

PhD student — Oct. 2020 – Present
College of Mechanical and Electrical Engineering, Nanjing University of Aeronautics and Astronautics — *Nanjing, China*

- Preparing my thesis for applying a PhD degree

Visiting researcher — Oct. 2019 – Sep. 2020
SDU Biorobotics, University of Southern Denmark — *Odense, Denmark*

- Developed a distributed force feedback-based reflex with online learning for adaptive quadruped robot control
- Performed a comparative study of adaptive interlimb coordination mechanisms for self-organized robot locomotion (comparing between continuous phase modulation and phase resetting of decoupled CPGs)

PhD student — Jan. 2018 – Sep. 2019
College of Mechanical and Electrical Engineering, Nanjing University of Aeronautics and Astronautics — *Nanjing, China*

- Investigated neural control with adaptive physical and neural communications for reusable quadruped locomotion
- Investigated adaptive neural control for self-organized locomotion and obstacle negotiation of quadruped robots
- Developed a small-sized reconfigurable quadruped robot with multiple sensory feedback

Robotic engineer — Apr. 2016 – Dec. 2017
College of Mechanical and Electrical Engineering, Nanjing University of Aeronautics and Astronautics — *Nanjing, China*

- Developed control algorithms for high slope walking of a hydraulic quadruped robot
- Developed a hardware system of a hydraulic quadruped robot

Master student — Jun. 2014 – Sep. 2016
College of Astronautics, Nanjing University of Aeronautics and Astronautics — *Nanjing, China*

- Investigated path planning with lidar of mobile robots
- Investigated gait planning and foot trajectory optimization for efficient locomotion of hydraulic quadruped robots

Presentation

Oral

- International Youth Conference of Bionic Engineering (IYCBE 2018), "Adaptive neural control for self-organized locomotion and obstacle negotiation of quadruped robots", 7th-9th November 2018, Odense, Denmark.
- China Denmark Bio-inspired Engineering Seminar, "Adaptive neural control with adaptive physical and neural communications for quadruped locomotion", 15th October 2018, Nanjing, China.

Post

- The 2nd National Robot Innovation and Design Competition, "A small-sized quadruped robot for studying bio-inspired locomotion control", 23rd – 26th September 2020, Xi'an, China.
- The 27th IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN 2018), "Adaptive neural control for self-organized locomotion and obstacle negotiation of quadruped robots", Aug. 2018, Nanjing, China.

Award

- The third prize in the 2nd National Robot Innovation and Design Competition, 23rd – 26th September 2020, Xi'an, China.
- Scholarship for supporting visiting research one year in Denmark from China Scholarship Council, 2019, China
- The third prize in the 7th "Tiangong Cup" of postgraduate innovative experiment competition, 30th November 2018, China.

Publications

1. Sun, T., Shao, D., Dai, Z., & Manoonpong, P. (2018, August). Adaptive neural control for self-organized locomotion and obstacle negotiation of quadruped robots. In 2018 27th IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN) (pp. 1081-1086). IEEE.
2. Sun, T., Xiong, X., Dai, Z., & Manoonpong, P. (2020). Small-Sized Reconfigurable Quadruped Robot With Multiple Sensory Feedback for Studying Adaptive and Versatile Behaviors. Frontiers in Neurorobotics, 14, 14.
3. Sun, T., Dai, Z., & Manoonpong, P. (2020). Robust and reusable self-organized locomotion of legged robots under adaptive physical and neural communications. IEEE Transactions on Cybernetics (under review).
4. Sun, T., Dai, Z., & Manoonpong, P. (2020). Distributed force feedback-based reflex with online learning for adaptive quadruped motor control. Neural Networks (revision).
5. Sun, T., Xiong, X., Dai, Z., Dai O., & Manoonpong, P. (2020). A comparative study of adaptive interlimb coordination mechanisms for self-organized robot locomotion. Fromtiers in Neurorobotics, (revision)

Technical Skills

Languages: Matlab, Python, C/C++, Lua, Latex
Platforms: Ubuntu, ADAMAS, ROS, CoppeliaSim, LpzRobots, Webots
Developer Tools: Git, Eclipse, Vim, UG NX, Inkscape, Kdenlive