Mathias Thor - Curriculum Vitae

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Summery

Mathias Thor is currently pursuing a PhD degree with SDU Embodied Systems for Robotics and Learning at the University of Southern Denmark. The primary aim of his research is to develop adaptive locomotion controllers that are able to recognize and adapt to different robot bodies and environments. Although in his early years of conducting research, Mathias has already won several awards, been granted the EliteForsk travel grant, and published nine scientific papers on artificial intelligence and robotics.

Education

2017 - 2021 **4+4 Ph.D., University Of Southern Denmark [mathias@mmmi.sdu.dk]**
Project title: Neurorobotic Technology for Advanced Robot Motor Control
Supervisor: Poramate Manoonpong

2016 - 2019 **Master of Science in Robotics, University Of Southern Denmark**
Danish weighted average master grade average of 12.0 (w/o mater thesis)
Project title: Modular Legged-Robotic System
Supervisor: Poramate Manoonpong
Master thesis grade: 12

2013 - 2016 **Bachelor of Science in Robotics, University Of Southern Denmark**
Danish weighted average bachelor grade average of 10.9 (w/o bachelor thesis)
Project title: Embodied control of a dung beetle inspired hexapod
Supervisor: Poramate Manoonpong
Bachelor thesis grade: 12

Experience

2019 - 2020 **Co-supervising two master students**
40*2 ECTS - 10-semester Robot Systems, University of Southern Denmark

2019 **Guest talk on Robotics, Neural Control and Reinforcement Learning**
BRAIN-LAB - Vidyasirimedhi Institute of Science and Technology, Thailand

2019 **Teaching "Adaptive embodied locomotion control systems"**
5*2 ECTS - 9-semester Robot Systems, University of Southern Denmark

2018 **Teaching "Adaptive embodied locomotion control systems"**
5*2 ECTS - 9-semester Robot Systems, University of Southern Denmark

2018 **Co-supervising two master students**
15*2 ECTS - 6-semester Robot Systems, University of Southern Denmark

2018 **Co-supervising two bachelor students**
30*2 ECTS - 10-semester Robot Systems, University of Southern Denmark

2018	Teaching the course "Underactuated Robotics"

2018   Teaching the course "Underactuated Robotics"
5 ECTS - 6-semester Robot Systems, University of Southern Denmark

2017 - 2018   Teaching assistant on the course "Mathematical methods in programming"
5 ECTS - 1-semester Physics and Technology, University of Southern Denmark

2015 - 2017   Student programmer at Universal Robots
Odense, Denmark

Conference contributions

2019   Presenting a paper at the iROS2019 conference
The Venetian, Macau

2018   Media Operation and session Chair at the IYCBE2018 conference
University of Southern Denmark

2018   Presenting a paper at the IYCBE2018 conference
University of Southern Denmark

2017   Presenting a paper at the SWARM2017 conference
Kyoto University, Japan

Publication list

2019

A Fast Online Frequency Adaptation Mechanism for CPG-Based Robot Motion Control
M. Thor, and P. Manoonpong
IEEE Robotics and Automation Letters 2019 (Journal paper)

Error-Based Learning Mechanism for Fast Online Adaptation in Robot Motor Control
M. Thor, and P. Manoonpong
IEEE Transactions on Neural Networks and Learning Systems 2019 (Journal paper)

CPG Driven RBF Network Control with Reinforcement Learning for Gait Optimization of a Dung Beetle-Like Robot
Matheshwaran Pitchai, Xiaofeng Xiong, Mathias Thor, Peter Billeschou, Peter Lukas Mailänder, Binggwong Leung, Tomas Kulvicius, and Poramate Manoonpong
In Artificial Neural Networks and Machine Learning – ICANN 2019: Theoretical Neural Computation (Conference paper)

Modular Neural Control for Dung Beetle-like Leg Movements of a Dung Beetle-like Robot
Binggwong Leung, Mathias Thor, and Poramate Manoonpong
In the 9th International Symposium on Adaptive Motion of Animals and Machines (Conference paper)

2018

MORF - Modular Robot Framework
Mathias Thor, Jørgen Christian Larsen, and Poramate Manoonpong
In The 2nd International Youth Conference of Bionic Engineering - IYCBE2018 (Conference paper)
- ***Best Student Paper Award***

A dung beetle-inspired robotic model and its distributed sensor-driven control for walking and ball rolling
M. Thor, T. Strøm-Hansen, L. B. Larsen, A. Kovalev, S. N. Gorb, E. Baird, and P. Manoonpong
Artificial Life and Robotics 2018 (Journal paper)

Modular neural control for bio-inspired walking and ball rolling of a dung beetle-like robot
Binggwong Leung, Mathias Thor, and Poramate Manoonpong
In ALife 2018 (Conference paper)

2017

Advantages of using a biologically plausible embodied kinematic model for enhancement of speed and multifunctionality of a walking robot
Mathias Thor, Theis Strøm-Hansen, and Leon Bonde Larsen
In Proceedings of the 2nd International Symposium on Swarm Behavior and Bio-Inspired Robotics - SWARM2017 (Conference paper)
- ***Best Student Paper Award***

Distributed Sensor-Driven Control for Bio-Inspired Walking and Ball Rolling of a Dung Beetle-Like Robot
Theis Strøm-Hansen, Mathias Thor, Leon Bonde Larsen, Emily Baird, and Poramate Manoonpong
In Proceedings of the 2nd International Symposium on Swarm Behavior and Bio-Inspired Robotics - SWARM2017 (Conference paper)

Fundings

EliteForsk-Travel Grant 2019
Funding Agency: Ministry of Education and Research (Copenhagen)
Amount: DKK 200.000
Grant period: 2019-01 to 2020-12

Foundation Idella Study Travel Grant 2018
Funding Agency: Ministry of Education and Research (Copenhagen)
Amount: DKK 20.000
Grant period: 2018-08 to 2019-06

International partners

Zhendong Dai: Nanjing University of Aeronautics and Astronautics, China. Collaboration on robot control and bio-inspired movement.

Stanislav Gorb: Kiel University, Germany. Collaboration on the modelling of insects and their movement.

Emily Baird: Lund University, Sweden. Collaboration on the modelling of insects and their movement.

BRAIN-LAB: Vidyasirimedhi Institute of Science and Technology, Thailand. Collaboration on Locomotion control and robot design.