Bachelor Theses

Past projects:

1. Mr. Dennis Goldschmidt (2012, Physics, University of Göttingen, Germany): “Adaptive Climbing Behavior of Walking Machines”.


4. Mr. Julius Faber (2012, Informatics, University of Göttingen, Germany): “Reinforcement Learning on a Predefined Situation Space using a KUKA Lightweight Robot Arm (Simulation)”.


7. Mr. Ilyas Kuhlemann (2013, Physics, University of Göttingen, Germany): “Analysing a Dynamic Walker’s Gait Stability for Compliant and Rigid Ankles”.


10. Mr. Thor Stærk Stenvang and Mr. Mathias Nielsen (2014, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Control and Regulation of the Starkick Football Table”.

11. Mr. Jon Lund (2014, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Control and Motion Planning of a Five Axis Robot Arm”.

12. Mr. Vince Jankovics (2015, Mechatronics, University of Southern Denmark, Denmark): “Artificial Neural Network based Adaptive Complaint Control for Robotic Arms”.

13. Mr. Philipp Hannibal (2015, Physics, University of Göttingen, Germany): “Visualization of Neural Networks”.


15. Mr. Theis Strøm Hansen and Mr. Mathias Thor (2016, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Extending Walk-net towards Emergent Object Manipulation for a Hexapod Robot”.

16. Mr. Martin Bagge Jensen and Skjold Dyre (2016, Software Engineering, University of Southern Denmark, Denmark): “Learning and Utility of Receptive Fields for Generation of Movement Patterns”.

17. Mr. Jevgeni Ignasov (2018, Mechatronics, University of Southern Denmark, Denmark): “The motor control development of a compliant robotic arm”.


19. Mr. Jens Troels Nielsen and Mr. Jeppe Langaa (2018, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Neural control of a pipe climbing robot”.

20. Mr. Alexander Løvbjerg Nakos, Mr. Andreas Aagaard Asmussen, Mr. Nikolaj Pihl Sørensen, Mr. Ole Egholm Pedersen (2019, Engineering (Robotics), University of Southern Denmark, Denmark): “Control of the Dung Beetle Robot ALPHA”.

**Current projects:**

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**Master Theses**

**Past projects:**

1. Mr. Kawee Suwannasit (2010, Mechanical and Aerospace Engineering, King Mongkut’s University of Technology, Thailand): “Control for Locomotion and Transformation of a Reconfigurable Spherical Robot into a Three Legged-Wheeled”.

2. Mr. Timo Nachstedt (2013, Physics, University of Göttingen, Germany): “Adaptive Neural Oscillator with Synaptic Plasticity for Robot Locomotion Control”.

3. Mr. Simon Christoph Stein (2013, Physics, University of Göttingen, Germany): “3D Segmentation of Objects and their Parts based on Local Geometric Cues”.

4. Mr. Subhi Barikhan (2014, Informatics, University of Göttingen, Germany): “Multiple CPGs with Local Feedback Mechanisms for Locomotor Adaptation of Hexapod Robots”.

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7. Mr. Dennis Goldschmidt (2014, Neural Systems and Computation, University of Zurich/ETH Zurich, Switzerland): “Modular Neural Mechanisms for Adaptive Spatial Behavior in Autonomous Robots”.


10. Mr. Hans-Joachim Krauch (2015, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Exploration and Object Retrieval with Robot Swarms”.

11. Mr. Ditlev Andersen and Mr. Anders Prier Lindvig (2015, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Visual Segmentation of Potatoes in Cluttered Environments”.

12. Mr. Patrick Stolc and Mr. Giuliano Di Canio (2015, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Adaptive Locomotion Control of Embodied Legged Systems”.

13. Mr. Lasse S. Børresen (2015, Engineering (2016, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Separation of Multiple Sound Sources Using Directional Stereo”.

14. Mr. Stoyan Stoyanov (2015, Engineering (2016, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Brain - Computer Interface for Robot Control”.

15. Mr. Halvor Tram Tramsen (2016, Physics, University of Göttingen, Germany): “Using Anisotropic Friction to Improve Locomotion of Hexapod Robots on Steep Slopes”.

16. Mr. Chris Tryk Lund Sørensen (2016, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Object manipulation in a hexapod robot”.

17. Mr. Dominik Steven Weickgenannt (2016, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Action-Sequence Learning in Mobile Robotics”.

18. Mr. Carlos Moro García (2016, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Multiple time scales of learning for adaptive behavior of mobile robots”.

19. Ms. Imara van Dinten (2016, Engineering (Robot Systems), University of Southern Denmark, Denmark): “EEG Pattern Recognition”.

20. Mr. Timon Tomás (2016, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Artificial Neural Control of a Prosthetic”.

21. Mr. Martin Bulin (2016, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Classification of terrain based on proprioception sensing for multi-legged walking robot”.

22. Mr. Ignacio Torroba Balmori and Mr. Jorge Rodriguez Marin (2016, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Design, simulation and development of a bipedal locomotion platform for human-like gaits studies”.

23. Mr. Pongsiri Borijindakul (2017, Metrology, Physics, Faculty of Science, Kasetsart University, Thailand) “Softness Measurement and Application to Haptic system for Soft Sample”.

24. Mr. Krzysztof Smyl (2017, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Neural-Based Control System for Autonomous Operation of Drones”.

25. Mr. Michelangelo Setaro (2016, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Affordance learning applied on bio-inspired artificial agent”.

26. Mr. Aditya Kapilavai (2017, Mechatronics Engineering, University of Southern Denmark, Denmark): “Modeling and Control of Dung Beetle-Like Robots”.

27. Mr. Kristoffer Honoré (2017, Engineering (Robot Systems), University of Southern Denmark, Denmark): “EEG-based Motor Control”.

28. Mr. Malte Carstensen (2017, Mechatronics Engineering, University of Southern Denmark, Denmark): “Implementation and Verification of an Adaptive Neural Control Oscillator for Robot Control on a FPGA”.

29. Mr. Aitor Miguel Blanco (2017, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Neural Control of a Millipede-like Robot”.

30. Mr. Nikolaj Schaldemose Reibke (2017, Engineering (Software), University of Southern Denmark, Denmark): “Evolving Robot Control for Object Transportation”.

31. Mr. Gal Gorjup (2017, Mechanical Engineering, University of Ljubljana, Slovenia): “EEG signal processing and classification for advanced human-machine interfaces”.

32. Mr. Arne Devos (2018, Katholieke Universiteit Leuven, Faculty of Engineering Technology, MSc Energy Engineering Technology, Belgium): “Development of Autonomous Drones for Adaptive Obstacle Avoidance & Object Tracking in Real World Environments”.

34. Mr. David Thomas Docherty (2018, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Development of speech localisation and multi-sensory fusion”.

35. Mr. Martin Bagge Jensen (2018, Engineering (Software), University of Southern Denmark, Denmark): “Recurrent Neural Network for Movement Prediction of Surrounding Objects”.

36. Mr. Salman Taj (2018, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Modeling, Simulation and Control of a Millipede inspired Robot”.

37. Ms. Carolin Nowak (2019, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Reactive control for smooth object approaching of a mobile robot”.

38. Mr. Carlos Viescas Huerta (2019, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Locomotion control & muscle models of a dung beetle robot”.

39. Mr. Ricardo Alexandre Ribeiro Fonseca Rodrigues Do Carmo (2019, Engineering (Robot Systems), University of Southern Denmark, Denmark): “EMG-Based Prosthetic Hand Control”.

40. Mr. Daniel Holst Hviid (2019, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Motion sequence control of a bio-inspired robot using spiking neural networks”.

41. Mr. Mathias Thor (2018, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Modular Robot Framework”.

42. Mr. Ada Varga (2019, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Bio-inspired Behaviour Learning for Dynamic Collision Avoidance on a Mobile Robot”.

43. Mr. Donghao Shao (2020, Institute of Bio-inspired Structure and Surface Engineering, Nanjing University of Aeronautics and Astronautics (NUAA), China): “CPG-based climbing robot control”.

44. Mr. Alexander Dupond Larsen (2020, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Neural control mechanisms with multiple sensory feedback for self-organized insect-like locomotion in complex situations”.

45. Mr. Antonio Gonzalez Rot (2020, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Actuator fault detection of an UAVs”.

46. Mr. Benjamin Rømer Hvenegaard and Mr. Emil Seerup (2020, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Adaptive Control for Exoskeleton”.

47. Mr. Laurenz Elstner (2020, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Adaptive control for a proprioceptive motor-driven bio-inspired robot leg”.

48. Mr. Christian Quist Nielsen (2020, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Legged robot locomotion control using proprioceptive sensory feedback”.
49. Mr. Hemanth Kanner (2020, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Visual Monocular SLAM”.

50. Mr. Jevgeni Ignasov (2020, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Bio-Inspired Navigation for Autonomous Robots”.

51. Mr. Mohamed Abouseif (2020, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Learning Synergies between Motion Primitives with Self-supervised Deep Reinforcement Learning”.

52. Mr. Phillip Meyer Kyndbøl (2020, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Using machine learning for optimizing and adapting gecko like robot locomotion”.

53. Ms. Marlene Hammer Jeppesen (2020, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Adaptive Neural CPG-based Control for a Soft Robotic Tentacle”.

Current projects:

54. Mr. Naris Asawalertsak (current, School of Information Science & Technology, Vidyasirimedhi Institute of Science & Technology (VISTEC), Thailand): “Adaptive Neural Control for Soft Robots”.


56. Mr. Emil Lykke Diget (current, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Machine Learning Methods for Reliable Detection of Faults for Drones”.

57. Mr. Askarbek Pazylbekov (current, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Soft Augmentation and Programming of a Robot Arm for an Art Installation”.

58. Mr. Bjarke Engsig Larsen (current, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Communication Through Softness — a Visual Aid for Handover in Collaborative Robotics”.

Diploma Thesis (Equivalent to Master Thesis)

Past project:

1. Ms. Silke Steingrube (2007, Physics, University of Göttingen): “Chaos Control in Neuromodules and Application to Gait Generation”.

PhD Theses

Past projects:

1. Mr. Guanjiao Ren - PhD Internship from School of Automation Science and Electrical Engineering, Beihang University of China - (2014): “Multiple CPGs-Based Control of Walking Machines”.


3. Mr. Sakyasingha Dasgupta: (2015, Physics, University of Göttingen): “Dynamics of Learning and Memory in Large Recurrent Neural Networks”.

4. Mr. Xiaofeng Xiong (2015, Informatics, University of Göttingen): “Neuromechanical Model for Dynamic Walking”.

5. Mr. Potiwat Ngamkajornwiwat (2020, Institute of Field Robotics, King Mongkut’s University of Technology Thonburi, Thailand): “Artificial Hormone Network for Adaptive Robots”.

Current project:

6. Mr. Nol Chindapol (current, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Multi-scale Model of Coral Growth in the Context of Morphological Computation and Plasticity”.

7. Mr. Peter Billeschou (current, Engineering (Robot Systems), University of Southern Denmark, Denmark): “The development of a dung beetle-inspired robot for multiple functions”.

8. Mr. Nan-Sheng Huang (current, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Neural network implementation on FPGA”.

9. Mr. Mathias Thor (current, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Adaptive locomotion control of legged robots”.

10. Ms. Becky Steckhahn-Strohmer (current, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Behavioural improvement of tactile sensing in a hexapod robot”.

11. Mr. Pongsiri Borijindakul (current, Nanjing University of Aeronautics and Astronautics (NUAA), Nanjing, China): “Smart foot design and control for versatile climbing robots”.

12. Ms. Lasri Wafae (current, Nanjing University of Aeronautics and Astronautics (NUAA), Nanjing, China): “Neural control with minimal force feedback and muscle models for adaptive compliance manipulation and continuous complex trajectory following”.

13. Mr. Sun Tao (current, Nanjing University of Aeronautics and Astronautics (NUAA), Nanjing, China): “Adaptive sensorimotor coordination for self-organized locomotion and adaptation of legged robots”.
14. Mr. Worasuchad Haomachai (current, Nanjing University of Aeronautics and Astronautics (NUAA), Nanjing, China): “High-level Decision Making for Complex Behavior of Gecko Robots”.

15. Ms. Yanbin Zhang (current, Nanjing University of Aeronautics and Astronautics (NUAA), Nanjing, China): “Neural Learning for Adaptive Robot Conrol”.

16. Mr. Chaicharn Akkawutvanich (current, School of Information Science & Technology, Vidyasirimedhi Institute of Science & Technology (VISTEC), Thailand): “Adaptive Neural Control for Exoskeleton”.


20. Mr. Binggwong Leung (current, School of Information Science & Technology, Vidyasirimedhi Institute of Science & Technology (VISTEC), Thailand): “Neural Control of a Dung Beetle Robot”.


22. Mr. Vatsanai Jaiton (current, School of Information Science & Technology, Vidyasirimedhi Institute of Science & Technology (VISTEC), Thailand): “Neural control of autonomous drones for inspection”.

23. Mr. Thatthep Rukpanich (current, School of Information Science & Technology, Vidyasirimedhi Institute of Science & Technology (VISTEC), Thailand): “Adaptive Soft Robots”.

**Student Projects**

**Past projects:**

1. Mr. Birk Urmersbach – Bachelor Student (2009, Biology, University of Göttingen, Germany): “Single Insect-Like Leg with Adaptive Motion Control”.


3. Mr. Tobias Jahn – Bachelor Student (2012, Physics, University of Göttingen, Germany): “Simple Sound Localization Using Three Microphones in a Plane and E-puck Interface”.

4. Mr. Felix Maischner, Mr. Henning Stark, Mr. Julius Strake, Mr. Vitali Telezki, and Mr. Marina Eckermann – Bachelor Students (2013, Physics, University of Göttingen, Germany): “Sound Localization and Obstacle Avoidance of E-puck mobile robots”.

5. Mr. Ditlev Andersen – Master Student (2014, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Intelligent Control of a Semi-Active Suspension System for Improved Road Holding and Vehicle Handling”.

6. Ms. Imara van Dinten (2014, AI4 project, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Moving problem solving robot(s) Multi agent A*”.

7. Mr. Kenneth Korsgaard Meyer (2014, AI4 project, Engineering (Robot Systems), University of Southern Denmark, Denmark): “AI controller for a sailboat”.

8. Mr. Giuliano Di Canio and Mr. Patrick Stolc (2014, AI4 project, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Exploring Energy Consumption of a Bio-inspired Robotic Leg with a Passive Tarsus Component: An Embodied AI approach”.

9. Mr. Stoyan Stoyanov – Master Student (2014, AI4 project, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Energy Acquisition in Robots using Solar Power”.

10. Mr. Carlos Moro Garcia (2015, Engineering (Robot Systems), University of Southern Denmark, Denmark): “A Software Framework for Artificial Intelligence”.

11. Mr. Dominik Steven Weickgenannt (2015, AI4 project, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Action-Sequence Learning in Mobile Robotics”.

12. Mr. Krzysztof Smyl (2015, AI4 project, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Obstacle Avoidance System Utilising Neural Receptive Fields Approach”.

13. Mr. Michelangelo Setaro (2015, AI4 project, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Adaptive locomotion control of a hexapod robot”.

14. Mr. Chris Tryk Lund Sørensen (2015, AI4 project, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Pushing object in simulation with a hexapod robot”.

15. Mr. Timon Tomás (2015, AI4 project, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Approximation of EMG/EEG signals with a Radial Basis Function Neural Network”.


17. Mr. Theis Strøm Hansen and Mr. Mathias Thor (2017, individual study, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Extending the Walknet controller to manipulate objects”.

18. Mr. Almir Mehanovic (2017, individual study, Engineering (Software Engineering), University of Southern Denmark, Denmark): “Evolving robot morphology with genetic algorithms”.

19. Mr. Jevgeni Iglasov (2017, internship, Mechatronics, University of Southern Denmark, Denmark): “Robotic Foot Inspired by Insect Tarsus”.

20. Mr. Jettanan Homchanthanakul (2017, internship, Engineering (Robot Systems), Institute of Field Robotics King Mongkut’s University of Technology Thonburi, Thailand): “Using of artificial hormones to improve robot locomotion in changing environments”.

21. Mr. Siribhop Yooyongchuen (2017, student exchange, Engineering, King Mongkut’s University of Technology North Bangkok, Thailand): “A mobile robot with a lizard ear system”.

22. Mr. Saran Singhasthitisukh (2017, student exchange, Engineering, Sirindhorn International Institute of Technology, Thammasat University, Thailand): “Locokit Leg Redesign”.


24. Mr. Christian Koed Pedersen (2017, AI4 project, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Neural Control for Autonomous Collision Avoidance for Drones”.

25. Mr. Arthicha Srisuchinnawong (2018, internship, Nanjing University of Aeronautics and Astronautics (NUAA), Nanjing, China): “Application of artificial hormone in a gecko robot”.


27. Mr. Kittipod Punthai (2018, internship, Nanjing University of Aeronautics and Astronautics (NUAA), Nanjing, China): “Simulation of a Dog Robot”.

28. Mr. Thanat Ngamwongsakollert (2018, internship, Nanjing University of Aeronautics and Astronautics (NUAA), Nanjing, China): “Tracking motion of gecko experiments for locomotion of a gecko robot”.

29. Mr. Matheshwaran Pitchai (2018, AI4 project, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Gait optimization of a 6-legged walking dung-beetle robot using Gaussian mixture model (GMM) and PI² algorithm”.
30. Mr. Ada Varga (2018, AI4 project, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Correlation-based neural control for obstacle avoidance”.

31. Mr. Jens Troels Nielsen and Mr. Jeppe Langaa (2018, individual study, Engineering (Robot Systems), University of Southern Denmark, Denmark): “Extending the pipebot controller”.

**Current projects:**

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Finished projects: 110

Remaining project: 23

Total projects: 133

Bachelor Theses (total/finish/remain): 20/20/0

Master Theses (total/finish/remain): 59/54/5

PhD Theses (total/finish/remain): 23/5/18

Other student projects (total/finish/remain): 31/31/0

**Postdocs:**

1. Yang Li, NEUTRON, NUAA

2. Xiaofeng Xiong, DLife, SDU

3. Nat Dilokthanakul, Bio-inspired Robotics, VISTEC