Vassil Atanassov

Oxford, United Kingdom

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A Robotics PhD student with research interests in Deep Learning and Reinforcement Learning for control of legged robots.

Education

University of Oxford **Oxford, UK**
DPhil Engineering Science *2023-2027*
Part of the Dynamic Robot Systems group at the Oxford Robotics Institute. Fully funded iCASE from UKRI EPSRC in collaboration with Dyson.

Delft University of Technology **Delft, Netherlands**
MSc Robotics, Cum laude *2021-2023*
Strong focus on Deep Learning, Reinforcement Learning and Model-based control.

University of Glasgow **Glasgow, UK**
BEng Mechanical Engineering, First Class Honours *2017-2021*
Graduated top 5% of the class with a CGPA of 92%, focus on Dynamics, Control, and Robotics

Research Experience

PhD Thesis
Oxford Robotics Institute, University of Oxford *Sept 2023-Present*
Research on Deep Reinforcement Learning for legged robot locomotion and loco-manipulation.

Master's Thesis
Cognitive Robotics, TU Delft *Feb 2023-Aug 2023*
Reinforcement learning-based control for agile jumping for a quadruped equipped with parallel elastic actuators.

Research Intern
Cognitive Robotics, TU Delft *May-Nov 2022*
Research internship under the supervision of Dr. Cosimo Della Santina, working on model-based jumping control of a Unitree Go1 quadruped, as part of the Natural Intelligence EU project.

Volunteer Research Intern
Cognitive Robotics, TU Delft *Feb-May 2022*
Assisting in hardware set-up and experiments for walking and jumping for a spring-loaded Unitree Go1 quadruped.

Bachelor's Thesis
University of Glasgow *Oct 2020-Apr 2021*
Thesis under the topic of "Reactive Control for Mobile Robots in Unknown Environments". Investigated different reactive and deliberative algorithms, several of which were implemented and modified to test on a rover model in MATLAB. The purpose of the thesis was to determine the advantages of reactive control for navigating through unknown environments. The work and findings were presented to an academic committee and documented through a scientific report. Achieved a First Class grade.

Research Intern, Glasgow
FUSE Centre for Doctoral Training *Aug-Oct 2020*
Worked on ultrasound phased array and Full Matrix Capture testing, collaborated on a method to build and display 3D laser data.

Teaching Experience

Teaching Assistant **Oxford, UK**
Oxford Robotics Institute, University of Oxford *Feb 2024*
Helped organise and taught doctoral students during the Robotics week for the Autonomous Intelligent Machines and Systems (AIMS) Doctoral programme.

Teaching Assistant **Delft, NL**
TU Delft, Cognitive Robotics *Sep-Nov 2022*
Student teaching assistant for the "Machine Learning for Robotics" Master's course.

Teaching Assistant **Glasgow, UK**
University of Glasgow *Jan-May 2021*
Supervised several tutorial groups of students for the Dynamics 1 course.

Publications

IEEE Robotics and Automation Magazine
Preprint *Jan 2024*
Atanassov V., Ding J., Kober J., Havoutis I., Della Santina C., *"Curriculum-Based Reinforcement Learning for Quadrupedal Jumping: A Reference-free Design"*.

IEEE Transaction on Mechatronics TMECH/AIM
Submitted *Jan 2024*
Ding J., Posthoorn P., **Atanassov V.**, Boekel F.G.M, Kober J., Della Santina C., *"Delft E-Go Quadrupedal Robot: Parallel Compliance Design, Control, and Validation"*.

IEEE Transaction on Robotics
Under Review *Nov 2023*
Ding J., **Atanassov V.**, Panichi E., Kober J., Della Santina C., *"Robust Quadrupedal Jumping with Impact-Aware Landing: Exploiting Parallel Elasticity"*.

Technical and Language Skills

Computer Science: Python, C++, MATLAB, Machine Learning (PyTorch and TensorFlow), Linux, Git

Robotics: ROS, Gazebo, PyBullet, Isaac Gym, Trajectory Optimisation, Model-predictive control, Reinforcement Learning, Hardware Experience (Unitree Go1)

Languages: English (fluent), Bulgarian (mother tongue), German (B1)

Achievements and Hobbies

- University of Glasgow Engineering Excellence List 2018, 2019, 2020, 2021.
- Finalist of the Engineers without Borders Design Challenge in 2018.
- Hobby robotics and automation, cooking, hiking, guitar, reading.