GVLAB Seminar

Dr. Olivier Stasse
LAAS, France

Whole body model predictive control and reinforcement learning to generate motion on legged robots

For over 20 years, the Gepetto group has been at the forefront of developing and testing new paradigms for motion generation in legged robots. Through an optimization-based approach that integrates motion planning and control, we have made significant progress in this field. This talk will revisit our key findings to date and use them as a foundation to motivate our current research on combining whole-body model predictive control with reinforcement learning. The focus of the talk will be on recent achievements in deploying end-to-end policies capable of generating highly dynamic sensor-based motions on quadruped robots. We will also explore the challenges involved in extending this approach to humanoid robots and highlight the importance of hardware through feedback from our experience with torque-controlled robots like TALOS, as well as open-source initiatives such as ODRI.

July 29th 2025
10:30-11:30
Hybrid: UT Hongo Campus
Eng. Bld 2 room 31A

zoom

Olivier Stasse is a Tenured Senior Research Scientist at the Laboratory of Analysis and Architecture of Systems, CNRS, Toulouse, France. He earned his Ph.D. in Intelligent Systems from Sorbonne University and a master on Operational Research from the same university. At LAAS, he leads the Gepetto group focusing on control, task and motion planning, perception and experimentation on humanoid robots. He was a funding member of the JRL laboratory (CNRS/AIST). He led the ROB4FAM a joint lab with Airbus from 2018 to 2024, and is participating to Dynamograde a joint lab between PAL Robotics France and LAAS. After being Associate Editor at IEEE Transactions Robotics, he is Senior Editor at RAL in Animaloids and Motion Planning.

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