



Topic	Learning graph representations for Primitives based humanoid control
Abstract	Learning structured graph-based representations on skeleton data still poses some challenges. This makes generating actions on the fly with such a paradigm even more challenging. To this end, the use of Probabilistic Movement Primitives (ProMPs) allows for spontaneous generation of learnt actions. The core idea behind this project would be to look into learning structured graph-representations for robot actions from human skeleton capture data to fit into the ProMPs framework.
Language	English
Exemplary Issues	ProMPs are one of the popular ways of teaching robots motor skills. However, learning them requires trajectory information from a set of demonstrations, which isn't always easily available. In this regard, action recognition datasets can be leveraged to learn robot actions. Instead of simple transferring the skeleton data to the robot, using structured latent space representations could help learn actions in a better manner. The main focus would be on extending the current Deep Learning based framework to exploit recent developments in Graph-based learning of structured representations to learn robotic actions from demonstrations.
Pre-requisites	Required: Programming knowledge of C++ or Python Preferable: Basic knowledge of Machine Learning/Deep Learning
Contact	The exact focus can be determined individually with the supervisors. The work is supervised by Vignesh Prasad, Prof. Dr. Jan Peters, and Prof. Dr. Dr. Ruth Stock-Homburg at the Chair of Marketing and Human Resources Management. Contact: vignesh.prasad@tu-darmstadt.de