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Recognition and Execution of Manipulations

The automatic capture, recognition and rendering of human manipulations represent important technologies in many applications, ranging from 3D virtual manuals to training simulators and others. Especially, however, the question of how to recognize and store manipulation information in a way that it is afterwards possible to use this data to control robots and make them perform the same manipulations is a difficult problem, because of the different embodiments of humans and machines. In this work we will demonstrate a novel semantic type of representation, by which human manipulations can be captured in a model free way. The so called Semantic Event Chains which we introduce allow for manipulation recognition but – being a Markov type model – they can also be used to control the sequencing of actions in a robot.