Submitted to CIRA 2005
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"**Using Sensory-Motor Phase-plots to Characterise Robot-Environment Interactions**"

Abstract

Information theoretic methods are used to characterise and identify robot-environment interactions, with a view to using these to build an embodied interaction history from the robot's perspective. A bottom-up approach is taken using uninterpreted raw sensor and motor data. Interactions are analysed by calculating the Average Information Distance (AID) between all sensors and motors over a moving time window and used to create 2-dimensional ``phase-plots" that can be thought of as describing the current interaction. Sensor-Motor AID Phase-plots are shown to be able to distinguish simple behaviours among a sequence of behaviours.