Preface

This volume contains the papers presented at workshop on Multimodal Semantics for Robotics Systems (MuSRobS) held as part of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) on October 1, 2015 in Hamburg.

Main Goals of the Workshop

Human learning and reasoning is a process that involves information obtained from a range of different senses combined to form an incredibly successful cognitive system. Artificial autonomous systems should also effectively process and combine different sensory information to compliment each other to produce better logical inferences.

Through semantic modeling of low level features within a scenario, robots can generate representation of such features in level of abstraction where logical reasoning methods could be applied to them for decision making. Furthermore, at such level more than one modalities can be fused to compliment each other and produce logical inferences. This creates the possibility of robust decision making even under scenarios where certain modalities under perform, such as generic task performances.

Lately heterogeneous cognitive systems have become quite popular among the research community, specially those using deep learning techniques over images and language sources, showing promising results. This workshop provides a uniquely focused forum for the discussion of the intersection of different fields like, audio, speech, language, images and some others into unique robotics systems that can auto-improve by learning and can be exploited through different reasoning techniques.

This workshop will bring together the foremost researchers from different fields of robotics sharing and unifying techniques that can be applied to different areas on where they are currently used. Along with the presentation of novel works in the field some discussions will be encouraged to share latest advances among researchers. Finally prominent figures on the research of multimodal semantic systems will be invited to share their latest and most successful achievements and overviews on the field.

Topics of Interest

- Multimodal knowledge representation in robotic systems
- Semantic modeling of multimodal feature space

- Multimodal fusion at semantic level
- Logical reasoning of multimodal feature spaces
- Heterogeneous cognitive robotics systems
- Multimodal semantic reasoning on robotic systems
- Shallow and deep semantic processing of heterogeneous information
- Computational aspects on robots for multimodal semantic
- Methodologies and approaches for multimodal semantic annotation
- Representing and resolving semantic multimodal ambiguity
- Hybrid symbolic and statistical approaches to representing multimodal semantics
- Multimodal vs non multimodal approaches
- Multimodal semantics and ontologies for robots
- Robotic applications of multimodal semantic systems
- Joint language and image semantic robot learning and reasoning

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