

## **I. Algorithm of Semi-Semantic Description of a Known Environment; Classification and understanding of scenes**

II. *Workshop: Abstract*—Semantic description is common matter in the human word. Without understanding the meaning or contextual meaning of the events and concepts it would be extremely difficult to consider the procedures that each man performs in everyday life. Indeed, it is possible the semantic description keeps to the partially hierarchically ordered knowledge at different levels in the sense of the native human semantic. A lower level algorithm of the real world description is presented in this paper. The algorithm uses simple algebraic equations, commonly marked as L1-norm computational scheme. Such method can be easily transformed into hardware form. The novelty of the method includes heuristic rules use to classify variously shaped three-dimensional planes. An advantage of such approach is considerable stability providing, accuracy and mathematical apparatus simpleness. Presented approach uses set of unambiguous heuristic rules, which does not change at running time. Disadvantage of presented method may be necessity to use of multi-core processors on account of relatively higher computational demands. All experiments, which use devised method was tested in many different types of common office environments and the method was stable and provided accurate results.

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## **IV. Classification and understanding of scenes**

V. Objective of this research is to propose simple and powerful tool, enabling unambiguous identification the type of a dynamic or static environment. 2D LS is main sensor. Motivation: From the general point of view, semantics is the study of meaning; meaning of single speech words for example. Semantics is usually incorporated with human thinking and the world understanding. Thanks to the knowledge of the meaning of words and ability to process the set of such “meanings of words”, concatenate it or use it for further communication, the human in the real world can to draw results, foresee and of course thinking in contexts. Similar possibilities are at the stage of rudimentary research in robotics area. It is stands to reason, that the correct description of such abilities can significantly promote the ability of human-machine interaction and to perform complicated work. If we take into account the semantics with the context of the robotics, it may take a lot of different formulations.

## **VI. Primary audience/Secondary audience**

VII. There is no relation to the previous IROS or ICRA workshops/tutorials. I never participated in IROS or ICRA workshops.

VIII. No letter from related Technical Committee chairs.