



C-Semantic: A Novel Framework for Next-generation Robotic Vision via the Semantic Web Technologies

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Authors' contributions

This work was carried out in collaboration between all authors. All authors read and approved the final manuscript.

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ABSTRACT

Currently, research in robotic vision faces numerous challenges, predominantly because of noisy sensor input and the processor hungry practices of object detection. Conventional machine vision algorithms are unable to handle real-time scenarios efficiently because they mostly rely on local storage for objects and a limited training process. In real life, there are endless number of objects which requires a huge storage capacities and a high level of hardware to handle real-time images quickly. In this paper, we address the challenges of current robotic vision and propose a novel framework (C-Semantic) based on cutting-edge semantic web technologies. The framework divides the entire robotic vision process into three functional layers in which each layer performs a set of predefined tasks. The process begins with a vocal command that is further converted into a SPARQL query. We design a C-Semantic ontology that semantically stores the domain information along with objects physical and geometrical features. The image-processing module of the framework receives an input image of an object and looks up for the object from the virtual environment by consulting the semantic features. An inference engine aids the image-processing

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