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An Industrial Oriented Engineering Framework

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Abstract

Over the past few decades, Ontology Engineering has received a lot of attention, which has led to the publication of numerous works on methodologies, guidelines, tools, resources, and other things. including issues that require further investigation. Despite the fact that, there are as yet many open inquiries while tending to another metaphysics advancement project, with respect to how to deal with the general venture and expressive changes between exercises or which undertakings and instruments are suggested for each step. The overall and lightweight Linked Open Terms (LOT) methodology for building ontologies based on existing methodologies and geared toward developments and technologies in the semantic web is what we propose in this paper. In addition to academic and research projects, the LOT methodology emphasizes alignment with software development, which integrates ontology development into the software industry. It is reported that this methodology was used on 18 projects and incorporates lessons learned from more than 20 years of ontological engineering.

Keywords: Geopolymer • Soil stabilization • Engineering applications

Introduction

The Linked Open Terms (LOT) methodology, which not only presents the activities to be performed in the ontology development process but also proposes recommendations, tips, and tools to support them, is the aim of the work presented in this paper to respond to this situation and answer the questions posed in the first paragraph. The experience of at least 18 projects in which ontologies were developed, both by the authors of this paper and by external teams consisting of domain experts and software engineers, serves as the foundation for the LOT methodology. Our experience is also diverse in other ways. For instance, some projects have resulted in the creation of linked open data, while others have made the ontology an objective in and of itself, while still others have used the ontology as a standard schema for communicating with other systems, etc. In addition, one of the authors has previously contributed to two of the most well-known methods for building ontologies, providing not only extensive practical experience but also a broader perspective and understanding of how the ontology engineering field has developed over the past decade. This framework, which encompasses both the technological and methodological levels, encapsulates the conclusions and lessons learned from our experience.

The structure of the paper is as follows: Ontology development methods are discussed in detail in Section 2. The activities that are suggested to be carried out in any ontology development process are outlined in Section 3 of the LOT framework's methodological level, and the software support that is recommended for carrying them out is outlined in Section 4. The validation of the method based on its application and comparison to other approaches is the primary focus of Section 5. Section 6 presents future work directions and concludes. [1-3].

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Literature Review

In particular, METHONTOLOGY gave an overview of how an ontology should be created by defining a set of life cycle models and a development process. In addition, it offered comprehensive instructions for carrying out the ontology conceptualization. It suggested the waterfall, incremental, and evolving prototype life cycle models all of which share fundamental similarities with agile development as life cycle models. Incremental ensures that each version is compatible with the previous one. However, it has some disadvantages from a contemporary perspective: 1) There are some activities that are not precisely defined; 2) It was primarily concerned with creating application-independent ontologies, whereas it is now common practice to create ontologies as part of a larger software project; (3) METHONTOLOGY's presumptions, such as that the ontologies you reuse will remain stable and accessible indefinitely, are no longer true. Moreover, there was not as much prior experience as there is now when developing ontologies.

Even though they include support activities like evaluation, all of these traditional methodologies suggest time- and resource-consuming activities rather than simple and (semi-)automatic processes for developing and evaluating ontologies, which can be too heavy to be used in ontology development. However, these approaches are repurposed and suggested as part of LOT if the methods are still applicable [4,5].

Discussion

Permanent magnet synchronous motor (PMSM) servo drive system has been widely used for industrial sewing machines. The conventional control method is PID, which has some disadvantages such as large overshoot, bad robustness. In this paper, a servo control of the industrial sewing machine system based on the active disturbance rejection control (ADRC) is proposed, which can arrange the transient process, estimate and compensate the uncertain internal and external disturbance. It can highly enhance the dynamic performances of the system. Based on the Matlab/simulink software, the simulation results of the industrial sewing machine control system proved the effectiveness and robustness of the ADRC control strategy.

Conclusion

The set of activities that should be carried out in any ontology development process is described by all of the aforementioned methodologies. These activities include encoding the ontology and, in rare instances, support activities. However, none of these methodologies take into account the

publication activity or related tasks. As a result, LOT is the first methodology geared toward the publication of ontologies in accordance with FAIR principles and semantic web best practices. It also provides ontology developers with specific recommendations, tips, and potential tools. The technological and methodological aspects that are required during any lightweight ontology development process are the primary focus of this paper. By providing comprehensive methodological guidelines for the proposed activities and assisting ontology developers in building ontologies that take into account the particular characteristics of each ontology, it seeks to surpass previous methodologies.

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Conflict of Interest

None.

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