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Web2Touch 2021

Semantic Technologies for Smart Information Sharing and Web Collaboration

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Abstract—This foreword introduces a summary of themes and papers of the *Web2Touch (W2T) 2021* Track at the 30th *IEEE WETICE Conference* held as a virtual Conference, in October 2021. W2T 2021 includes four full papers. They all address relevant issues in the field of collaborative web, semantic technologies, ontologies, knowledge engineering, linked data and internet of things applied to themes of high impact on society, such as education, social inclusion and health. These papers propose to explore affordable technologies to promote and valorize rural areas, to develop ontologies for supporting simulation-based training in Medicine, to use semantic technologies in a framework for promoting reuse and interoperability of Electronic Health Records, as well as to use these technologies to provide recommendations in an Internet of Things device migration scenario.

Keywords- semantic Web; knowledge representation; collaborative Web; linked data; ontology, security, smart care, data analytics.

I Introduction

Web2Touch (W2T) (Bonacin et al., 2020) is committed to be an open forum to discuss solutions, based on advanced Web technologies, for relevant themes to society such as education, social inclusion and health. New advances in Web-based systems are the driver for changes in cooperative activities occurring in smart environments, cities, communities, or urban and rural areas, where human tasks are more and more performed via the Internet and the Web. Both Web practitioners and ordinary users are exploiting in rapidly-varying ways the richness of Web platforms to support a multitude of activities, from daily operations to strategic decision making. Based on these considerations, the W2T 2021 track considers knowledge sharing based on software engineering, on artificial intelligence, and on knowledge engineering (e.g. ontologies, taxonomies, etc.). The focus of the track is on information creation, maintenance, disambiguation, interlinking, veracity and security.

W2T deepens the concept of working and learning together by exploring decision assistance, collective intelligence, smart environments, intentions-based analysis, and other collaborative web-based ways of problem solving. In the urban scenario, for example, Internet of Things (IoT) systems capture massive data collections describing the overall urban environment as well as citizen exploitation and perception of available services. In health care systems, electronic health records allow storing a variety of information about patients as adopted treatments and monitored physiological conditions, while the Internet of Medical Things (IoMT) ensures the availability and processing of healthcare data through smart medical devices and the web. Moreover, in most domains, cooperation plays a crucial role in generating data, specifying knowledge, driving a user and context aware analysis process, and finally demanding an easily accessible and understandable knowledge at the end of the process.

W2T aims at exploring the state-of-the-art on these topics and users' practical experiences, as well as trends and research, paving the way for cutting-edge collaborative approaches to knowledge engineering and sharing.

In the 2021 edition, W2T track includes papers concerning practical issues in social inclusion, education, health, and Internet of Things. The papers of this edition aim at presenting alternatives to deal with the following issues:

- Designing a digital platform for artisans of rural villages, which tries to respond to the needs of local artisans.
- Proposing new interactive and incremental methodology for ontology engineering, which is able to support simulation-based training in Medicine.
- Proposing a framework for the development of reusable, interoperable and high quality Electronic Health Records for the oncology domain.

- Exploring OWL ontologies and SWRL rules technologies for recommendation in Internet of Things scenarios.

II Addressed Topics

W2T concerns improvements to cooperative work obtained through enhanced organization and management of knowledge. Examples are models and tools to represent dynamic changes in shared information, context-aware Web applications, new domains of application of semantic techniques, such as Industry 4.0, Big Data, social networks, Internet of Things, enhanced connectivity, and mobile technologies. W2T is also about practical experiences in both well established and emerging interdisciplinary applications, including eHealth, smart cities and companies, eLearning, and digital cultural heritage. Contributions addressing one or more of the following topics were expected:

Ontologies, Knowledge Graphs and Reasoning
- Ontology tools, ontology engineering, reuse and integration.
- Knowledge quality assessment.
- Knowledge discovery in knowledge graphs.
- Knowledge and data provenance.
- Automatic reasoning on complex data and knowledge
- Deep learning and machine learning approaches for knowledge graphs

Shared and collaborative knowledge management
- Data integration and interlinking from and across different sources and formats/semantics including Big Data, linked open data, crowdsourced data, social data, knowledge networks data
- Crowdsourcing techniques for semantic collaboration and platform self-maintenance
- Semantics in mobile Web, wearable devices, edge computing, cross-device content management and delivery
- Semantic annotations, 'semantifying' collaborative Web sources and semantic technologies for information Extraction Transformation and Loading (ETL)

Collaborative Web engineering and applications
- Experiences and best practices in deep Web for collaborative work and business
- Collaborative Web in interdisciplinary applications, such as Web science, eHealth, smart environments, smart factories in Industry 4.0, and cultural heritage
- Data quality and fairness in cooperative Web-based predictions and decision making
- Experiences derived from the analysis of publicly available datasets, such as: Computer Science Education (e.g., Blackbox, Engage-csedu), MOOC (e.g., Coursera, EdX), Computer Virology (e.g., Genoma, Drebin), Healthcare, Bioinformatics (e.g., Dream Challenges).

III Selected Papers

A. Full Papers

1. The paper "WECRAFT: a Platform for Networking Rural Craftsmen in Co-Production of Artisanal Crafts", by Pilar Maria Guerrieri, Sara Comai and Mariagrazia Fugini, proposes an initiative addressing the survival and valorization of indian rural areas, exploiting affordable technologies and humanities to enhance these areas, their artisans and their products.
2. The paper "OntoSAMSEI: Interactive ontology engineering for supporting simulation-based training in Medicine", by Shadi Baghernezhad-Tabasi, Loïc Druette, Fabrice Jouanot, Celine Meurger and Marie-Christine Rousset, presents an interactive and incremental ontology modeling technique aimed at modeling pedagogy domains related to simulation-based training sessions. The experiments show the effectiveness of the approach in such a specialized medical domain.
3. The paper "A Multidimensional Framework for Semantic Electronic Health Records in Oncology Domain", by Elaine Barbosa de Figueiredo, Mariangela Dametto, Ferrucio de Franco Rosa and Rodrigo Bonacin, proposes a novel approach for Electronic Health Records (EHRs), including a conceptual model, a specification process and supporting tools, aiming to standardize and semantically annotate them. The feasibility is demonstrated through a case study in a pediatric oncology setting.
4. The paper "Semantic rule-based device recommendation for service-migration in multiple-device contexts", by Dimeth Nouicer, Nizar Messai, Yacine Sam and Ikbal C. Msadaa, presents a semantic and rule-based solution for device recommendation in an Internet of Things device migration scenario, including an OWL ontology populated in real-time and a set of SWRL rules implemented in a web application.

IV W2T Team

Program Committee

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V References

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