



**Book Title: “Semantic IOT: Theory and Applications - Interoperability, Provenance and Beyond”**

To be published in Book series “**Studies in Computational Intelligence**” Springer

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With an exponentially increasing number of devices connected to the Internet, the Internet of Things (IoT) is spreading across multiple domains. The concept of IoT is realized through multiple technologies, such as, among others: cloud/fog/mist/dew/hybrid/edge computing. Consequently with proliferation of production-class IoT deployments (platforms/systems/services/applications) that aim at publishing, consuming and analyzing data within closed and open ecosystems, new challenges are being identified, among them of great importance become (i) How to build ecosystems based on data flows? (ii) How to provide common representation and/or shared understanding of data that will enable analysis across (systematically growing) ecosystems? (iii) How to track data provenance? (iv) How to ensure/manage trust? (v) How to represent data access policies that can be understood and enforced by different entities? (vi) How to search for things/data within ecosystems? Among proposed thus far approaches addressing these issues use of semantic technologies is often considered. Specifically, semantic technologies materialize in the following context: (i) representation of artefacts in IoT ecosystems and IoT networks, (ii) representation of provenance information, enabling provenance tracking, trust establishment and quality assessment, (iii) representation of data access policies enabling sharing policies across the ecosystem and inferencing rules that are not explicitly stated, (iv) semantic search enabling flexible access to data originating in different places across the ecosystem. Finally, Semantic Web, Web of Things, Linked Open Data are architectural paradigms, with which the aforementioned solutions are to be integrated with, to provide production-ready deployments.

Even though, we can observe an uptake of solutions utilizing semantic technologies in the IoT domain, the number of all-known production deployments and success stories is not large enough to provide a practice grounded guidance and best practices to follow. This book shall present current trends in application of semantic technologies in the IoT domain (and related concepts of Semantic Web, Web of Things) and explore enablers that they provide. Moreover, descriptions of real life use cases where semantic technologies have been adopted are welcomed.

#### **Recommended Topics:**

Topics to be discussed in this special issue include (but are not limited to) the following:

- **Semantic Web: A Landscape view**
- **Semantic web technologies**
- **Need and relevance of common vocabularies and ontologies in IoT domain**
- **Web Ontology Language (OWL) and its flavors**
- **Applicability of different description logic dialects to real life use cases**
- **SPARQL and its practical applicability**
- **Semantic Web search engines**
- **Applicability of semantics to provenance management**
- **Applicability of semantics to privacy and trust management**
- **Use of Semantic Web for Big Data**
- **Social Semantic Web**
- **Semantics in IoT transition from IoT to WoT**

- **M3 – A framework for cross-domain Semantic Web of Things applications**
- **Semantic technologies/standards used in providing interoperability: SKOS (Simple Knowledge Organization System), Contextualized OWL (C-OWL), SWRL (Semantic Web Rule Language) Expressive and Declarative Ontology Alignment Language (EDOAL), etc.**
- **Challenges in IoT data and semantic interoperability**
- **Semantic Translation: alignments, streaming translation, query rewriting**
- **IoT semantic networks**
- **Domain Specific Case Studies for semantic technologies applicability**
- **Semantic IoT future directions**
- **Survey/Study on open source tools**

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Paradigms

### **Chapter Submission Guidelines:**

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Word/ Latex Template: <https://www.springer.com/gp/authors-editors/book-authors-editors/resources-guidelines/rights-permissions-licensing/manuscript-preparation/5636>

Abstract and Chapter may be submitted compulsorily through easy chair: <https://easychair.org/conferences/?conf=siot2020>

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### **Important Dates:**

Chapter Proposal (500-1000 Words)	: 30 <sup>th</sup> Sep, 2019(Revised)
Primary Notification	: 15 <sup>th</sup> October, 2019
Full Chapter Submission	: 15 <sup>th</sup> January, 2020
Review Results to Chapter Authors	: 15 <sup>th</sup> February, 2020
Revised Chapter Submission from Chapter Authors	: 15 <sup>th</sup> March, 2020
Notifications to Chapter Authors	: 30 <sup>th</sup> March, 2020
Submission of Final Chapters to Editor	: 30 <sup>th</sup> April, 2020
Publication of the edited book	: Mid 2020