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## **Letter of Support for the SWSA Distinguished Dissertation Award**

### ***Leveraging Entity Types and Properties for Knowledge Graph Exploitation* (Dr. Alberto TONON)**

*I confirm that Dr. Tonon was awarded his PhD in 2017.*

Dear SWSA Award Committee,

I'm writing this short letter to give my enthusiastic support to Dr. Alberto Tonon for the SWSA Distinguished Dissertation Award. In his thesis, Mr. Tonon tackled the exciting problem of leveraging the types and properties of RDF data appearing in knowledge graphs to better exploit their contents in a number of key applications ranging from entity search (*ad hoc object retrieval*) to information integration and event detection. In particular, Mr. Tonon made three key contributions in his work:

- He was the first to combine structured (i.e., database queries) and unstructured (i.e., text search) techniques to search for entities in knowledge graphs. His resulting algorithm outperformed all previous techniques by a significant margin (up to 25% improvement in terms of Mean Average Precision). His paper on this topic was accepted at the top publication venue in Information Retrieval (SIGIR) and is already cited more than 50 times.
- Mr. Tonon was the first to introduce the problem of ranking types attached to a given entity taking into account the textual context in which it appears. Contrary to the coarse-grained and limited types typically used for such a task (e.g., *Person*, *Location*, *Event*) Mr.

Tonon built a hierarchy of half a million types that he then leveraged in his ranking process. The outcome of this project is a very innovative system, called TRank, which takes as input some text, identifies all entities appearing in the text and then outputs the most relevant fine-grained types for each entity given its textual context. The TRank paper was accepted at the top conference for Semantic Web research (ISWC), where it was nominated for the best paper award.

- Mr. Tonon was the first researcher to provide a methodology to evaluate entity retrieval systems *continuously*. This represents an important contribution as standard methodologies (e.g., Cranfield paradigm) do a *one shot* evaluation of such systems by leveraging a set of expert judges and their relevance judgments. Mr. Tonon introduced in that context new evaluation statistics as well as new *pooling* strategies to determine which documents to judge dynamically. The resulting paper was accepted at the top journal in Information Retrieval research (Information Retrieval Journal).

Overall, I find Mr. Tonon's dissertation excellent both from a technical and from a scientific perspective, well-written, and nicely structured. All the contributions of this thesis are from my perspective both scientifically sound—combining state-of-the-art methodologies and techniques from the Information Retrieval and the Semantic Web literature—as well as technically exciting (with compelling models, convincing algorithms, and exhaustive evaluation campaigns). At this point, I would also like to highlight the timeliness and the high practical relevance of the approach proposed by this work given the current deployment of large knowledge graphs inside companies; the author did in my opinion an outstanding job at identifying a number of key issues in the current deployment of knowledge graphs in enterprise settings, and proposed a series of coherent and very compelling solutions to those issues. Furthermore, I would like to point out that the author established the high value of his contributions through a very successful series of publications in the *very top publication venues* in his field (SIGIR, ISWC, WWW, ESWC, Inf. Retr. Journal, J. Web Sem). His papers already garnered 149 citations with a very rapid growth over the years.

To summarize, I consider this thesis as being of considerable significance to the research field considered, and fully support this work for the SWSA Distinguished Dissertation Award.



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