Semantic User Profiles: Learning Scholars' Competences by Analyzing their Publications

Submitted by bahar [1] on Thu, 2016-06-23 15:58

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Title	Semantic User Profiles: Learning Scholars' Competences by Analyzing their Publications
Publication Type	Conference Paper
Year of Publication	2016
Refereed Designation	Refereed
Authors	Sateli, B. [8], F. Löffler [9], B. König-Ries [10], and R. Witte [11]
Editors	Gonzalez-Beltran, A. [12], F. Osborne [13], and S. Peroni [14]
Conference Name	Semantics, Analytics, Visualisation: Enhancing Scholarly Data (SAVE-SD 2016)
Volume	9792
Date Published	04/2016
Publisher	Springer International Publishing
Conference Location	Montreal, QC, Canada
Type of Work	Full paper
Keywords	Linked Open Data [15], text mining [16], User Profiling [17]
Abstract	Semantic publishing generally targets the enhancement of scientific artifacts, such as articles and datasets, with semantic metadata. However, smarter scholarly applications also require a better model of their users, in order to understand their interests, tasks, and competences. These are generally captured in so-called user profiles. We investigate a number of existing linked open data (LOD) vocabularies and propose a description of scientists' competences in LOD format. To avoid the cold start problem, we suggest to automatically populate these profiles based on the publications (co-)authored by users, which we hypothesize reflect their research competences. Towards this end, we developed the first complete, automated workflow for generating semantic user profiles by analyzing full-text research articles through natural language processing. We evaluated our system with a user study on ten researchers from two different groups, resulting in mean average precision (MAP) of up to 92%. We also analyze the impact of semantic zoning of research articles on the accuracy of the resulting profiles. Finally, we demonstrate how these semantic user profiles can be applied in a number of use cases, including article ranking for personalized search and finding scientists competent in a topic — e.g., to find reviewers for a paper.
DOI	10.1007/978-3-319-53637-8_12 [18]

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Attachment	Size
savesd16.pdf [19]	481.69 KB

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