

Applying Ontology in the Analysis of a Research Collaboration Network

Antonio C. S. Branco^a, Fatima Dargam^{b1},
Alexandre Rademaker^c, Renato Rocha Souza^d

^a Fundação Getulio Vargas (EMAp)
Rio de Janeiro, Brazil
(antonio.branco@fgv.br)

^c Fundação Getulio Vargas (EMAp)
Rio de Janeiro, Brazil
(alexandre.rademaker@fgv.br)

^b SimTech Simulation Technology,
Graz, Austria
(f.dargam@simtechnology.com)

^d Fundação Getulio Vargas (EMAp)
Rio de Janeiro, Brazil
(rsouza.fgv@gmail.com)

Abstract

The main aim of this work is to specify an ontology model to be used within the collaboration research network *EWG-DSS-Collab-Net*. This network was designed to show the collaboration dynamics among the members of the EURO Working Group on Decision Support Systems (EWG-DSS). The *EWG-DSS-Collab-Net* in its version V.1 counted with input data from 70 authors from the period of 1989 up to 2008, and featured relationships like “author-publication-1topic” for its analysis. *EWG-DSS-Collab-Net V.2* is currently in development, and it extends the original implementation of *EWG-DSS-Collab-Net V.1* in many ways. It considers: 1) a hybrid methodology of input data collection (manual and automatic), using also web mining of electronic databases to automatically detect relationships of members; 2) a refined model of the publication relationship structure, taking into account “author-title-journal/conference-multiple keywords-multiple topics”, as well as a more refined model of the collaboration relationship structure, which includes workshop/conference publications, informal work meetings, event co-organisations, scientific committees/boards, book/journal editorials, etc. Along with social network analysis statistics, *EWG-DSS-Collab-Net V.2* performs collaboration trend analysis, showing co-authorships and co-citations to further illustrate the dynamics of EWG-DSS publications overtime. The analysis features, among other characteristics, (a) the number and percentage of multi-author papers and co-authors in comparison with single-author papers; (b) number and percentage of co-citations; (c) identification of publications that are closely related to a given topic, as well as the authors involved. This last feature helps specially to find researchers who could be more appropriate to collaborate in reviewing papers for the annual EWG-DSS workshops and journal editions, as well as to find specifically skilled researchers among the members of the group to collaborate on projects. Most of all, the extended analysis of *EWG-DSS Collab-Net V.2* plans to promote continued new research and collaboration among the academic members of the group and to attract new members for further fruitful collaboration.

For implementing mainly the feature in (c), an Ontology model will be specified and implemented, so that a common vocabulary of classifications relative to the main areas of the publications can be defined and matched with the existing key-words. ...

Keywords: Ontology, Network Analysis, *EWG-DSS-Collab-Net V.2*

¹ Fátima Dargam is one of the EWG-DSS Coordinators (<http://ewgdss.wordpress.com/>) and also collaborates as senior researcher at ILTC Institute of Logic and Theory of Science (www.iltc.br) in Rio de Janeiro, Brazil.