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## **Bibliometric-Enhanced Information Retrieval: 3rd International BIR Workshop**

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**Abstract.** The BIR workshop brings together experts of Bibliometrics and Information Retrieval. While sometimes perceived as rather loosely related, they share various interests and face similar challenges. Our motivation as organizers of the BIR workshop stemmed from a twofold observation. First, both communities are only partly overlapping albeit sharing various interests. Second, knowledge transfer would be profitable for both sides to tackle some of the emerging problems scholars face nowadays when they have to deal with identifying relevant and high quality literature among the very fast growing number of electronic publications available worldwide. Bibliometric techniques are not yet widely used to enhance retrieval processes in digital libraries, although they offer value-added effects for users. Information professionals working in libraries and archives, however, are increasingly confronted with applying bibliometric techniques in their services. The first workshop in 2014 set the research agenda by introducing each other state-of-the-art methods, reporting on current research problems, and brainstorming about common interests. The second workshop in 2015 continued the overall communication and reunification. This third BIR workshop continues to foster a common ground for the incorporation of bibliometric-enhanced services into scholarly search engine interfaces. In particular we address specific communities, as well as studies on large, cross-domain collections like Mendeley and ResearchGate. The third BIR workshop addresses scholarly and explicitly industrial researchers.

**Keywords:** Bibliometrics, Scientometrics, Informetrics, Information Retrieval, Digital Libraries

## 1 Introduction

IR and Bibliometrics are two sibling fields in Information Science that grew apart over the last decades. But today ‘big data’ scientific document collections (e.g., Mendeley, ResearchGate) bring together aspects of crowdsourcing, recommendation, interactive retrieval, and social networks. There is a growing interest to revisit IR and bibliometrics to provide cutting-edge solutions that help satisfying the complex, diverse, and long-term information needs scientific information seekers have, in particular facing the challenge of a fast growing number of publications available worldwide in workshops, conferences and journals that require to be made accessible to researchers. This interest was stressed in well-attended combined recent workshops, such as “Computational Scientometrics” (held at iConference and CIKM 2013), “Combining Bibliometrics and Information Retrieval” (at the ISSI conference 2013) and the previous BIR workshops at ECIR. Exploring and nurturing links between bibliometric techniques and IR is beneficial for both communities (e.g., Abbasi and Frommholz, 2015; Cabanac, 2015, Wolfram, 2015). The workshops also revealed that substantial future work in this direction depends on an ongoing awareness rise in both communities, manifesting itself in tangible experiments/exploration supported by existing retrieval engines.

There is an also growing importance of combining bibliometrics and information retrieval in real-life applications (see Jack et al., 2014; Hienert et al., 2015). These include the monitoring of the research front of a given domain and the operationalization of services to support researchers in keeping up-to-date with their field by means of recommendation and interactive search, for instance in ‘researcher workbenches’ like Mendeley / ResearchGate or search engines like Google Scholar that utilize large bibliometric collections. The resulting complex information needs require the exploitation of the full range of bibliometric information available in scientific repositories. To this end, the third edition of the BIR workshop will contribute to the identification and further exploration of applications and solutions that bring together both communities to tackle this emerging challenging task.

The first two bibliometric-enhanced Information Retrieval (BIR) workshops at ECIR 2014<sup>1</sup> and ECIR 2015<sup>2</sup> attracted more than 40 participants (mainly from academia) who engaged in lively discussions and future actions. For the third BIR workshop<sup>3</sup> we build on this experience.

## 2 Goals, Objectives and Outcomes

Our workshop proposal aims to engage with the IR community about possible links to bibliometrics. Bibliometric techniques are not yet widely used to enhance retrieval processes in digital libraries, yet they offer value-added effects for users (Mutschke,

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<sup>1</sup> <http://www.gesis.org/en/events/events-archive/conferences/ecirworkshop2014/>

<sup>2</sup> <http://www.gesis.org/en/events/events-archive/conferences/ecirworkshop2015/>

<sup>3</sup> <http://www.gesis.org/en/events/events-archive/conferences/ecirworkshop2016/>

et al., 2011). To give an example, recent approaches have shown the possibilities of alternative ranking methods based on citation analysis leading to an enhanced IR.

Our interests include information retrieval, information seeking, science modelling, network analysis, and digital libraries. The goal is to apply insights from bibliometrics, scientometrics, and informetrics to concrete, practical problems of information retrieval and browsing. More specifically we ask questions such as:

- The tectonics of IR and bibliometrics: convergent, divergent, or transform boundaries?
- How feasible and effective is bibliometric-enhanced IR in accomplishing specific complex search tasks, such as literature reviews and literature-based discovery (Bruza and Weeber, 2008)?
- How can we build scholarly information systems that explicitly use bibliometric measures at the user interface?
- How can models of science be interrelated with scholarly, task-oriented searching?
- How to combine classical IR (with emphasis on recall and weak associations) with more rigid bibliometric recommendations?
- How to develop evaluation schemes without being caught in too costly setting up large scale experimentation?
- Identifying suitable testbeds (like iSearch corpus<sup>4</sup>)

### **3 Format and Structure of the Workshop**

The workshop will start with an inspirational keynote (see Cabanac, 2015) to kick-start thinking and discussion on the workshop topic. This will be followed by paper presentations in a format found to be successful at BIR 2014 and 2015: each paper is presented as a 10 minute lightning talk and discussed for 20 minutes in groups among the workshop participants followed by 1-minute pitches from each group on the main issues discussed and lessons learned. The workshop will conclude with a round-robin discussion of how to progress in enhancing IR with bibliometric methods.

### **4 Audience**

The audiences (or clients) of IR and bibliometrics are partially overlapping. Traditional IR serves individual information needs, and is – consequently – embedded in libraries, archives and collections alike. Scientometrics, and with it bibliometric techniques, has matured serving science policy.

We propose a half-day workshop that should bring together IR and DL researchers with an interest in bibliometric-enhanced approaches. Our interests include information retrieval, information seeking, science modelling, network analysis, and digital libraries. The goal is to apply insights from bibliometrics, scientometrics, and informetrics to concrete, practical problems of information retrieval and browsing.

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<sup>4</sup> <http://www.gesis.org/fileadmin/upload/issi2013/BMIR-workshop-ISSI2013-Larsen.pdf>

The workshop is closely related to the BIR workshop at ECIR 2014, 2015 and strives to feature contributions from core bibliometricians and core IR specialists but having selected those which already operate on the interface between scientometrics and IR. In this workshop we focus more on real experimentations (including demos) and industrial participation.

## 5 Output

The papers presented at the BIR workshop 2014 and 2015 have been published in the online proceedings <http://ceur-ws.org/Vol-1143>, <http://ceur-ws.org/Vol-1344>. We plan to set up online proceedings for BIR 2016 again. Another output of our BIR initiative has been organized after the ISSI 2013 workshop on “Combining Bibliometrics and Information Retrieval” as a special issue in *Scientometrics*. This special issue has attracted eight high quality papers and will appear in early 2015 (see Mayr and Scharnhorst, 2015). Such dissemination serves well to account for raised awareness and contributions from the bibliometrics side and written for the bibliometrics side. We aim with the proposed workshop for a similar dissemination strategy, but now oriented towards core-IR. This way we build a sequence of explorations, visions, results documented in scholarly discourse, and building up enough material for a sustainable bridge between bibliometrics and IR.

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