## Report on ECIR 2016: 38th European Conference on Information Retrieval

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#### Abstract

The 38th European Conference on Information Retrieval took place from the 20th to the 23rd of March 2016 in Padua, Italy. This report summarizes the conference in terms of the presented keynotes, scientific and social programme, industry day, tutorials, workshops and student support.

#### 1 Introduction

The European Conference on Information Retrieval (ECIR) is the main European forum for the presentation of new research results in the field of information retrieval and cognate areas. Initiated as a BCS Information Retrieval Specialist Group (IRSG) Colloquium for Information Retrieval in 1979, the event developed in a renowned international scientific meeting. To reflect its European scale, since 1998 the conference was held alternately in the UK and continental Europe. From 2012, this rule has been removed. The most recent ECIR editions were held in Glasgow, UK (2008); Toulouse, France (2009); Milton Keynes, UK (2010); Dublin, Ireland (2011); Barcelona, Spain (2012), Moscow, Russia (2013), Amsterdam, The Netherlands (2014); and, Vienna, Austria (2015).

The 2016 edition of ECIR<sup>1</sup> [4] was hosted by the *Information Management Systems*<sup>2</sup> (IMS) research group at the Department of Information Engineering<sup>3</sup> of the University of Padua<sup>4</sup>, Italy, from 20th to 23rd of March 2016. A total of 220 people attended ECIR 2016.

### 2 Organizing Committee, Venues and Social Program

### 2.1 Organizing Committee

ECIR 2016 featured a large and multidisciplinary organizing committee, almost perfectly gender balanced: General Chair, Nicola Ferro (University of Padua, Italy); Program Chairs, Fabio Crestani Università della Svizzera Italiana (USI), Switzerland) and Marie-Francine Moens (KU Leuven, Belgium); Short Paper Chairs, Josiane Mothe (ESPE, IRIT, Université de Toulouse, France) and Fabrizio Silvestri (Yahoo! Labs, London); Student Mentorship Chairs, Jaana Kekäläinen (University of Tampere, Finland) and Paolo Rosso (Universitat Politècnica de València, Spain); Workshop Chairs, Paul Clough (University of Sheffield, UK) and Gabriella Pasi (University of Milano Bicocca, Italy); Tutorial Chairs, Christina Lioma (University of Copenhagen, Denmark) and Stefano Mizzaro (University of Udine, Italy); Demo Chairs Giorgio Maria Di Nunzio (University of Padua, Italy) and Claudia Hauff (TU Delft, The Netherlands); Industry Day Chairs, Omar Alonso (Microsoft Bing, USA) and Pavel Serdyukov (Yandex, Russia); Local Organization Chair, Gianmaria Silvello (University of Padua, Italy).

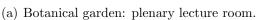
<sup>1</sup>http://ecir2016.dei.unipd.it/

<sup>&</sup>lt;sup>2</sup>http://ims.dei.unipd.it/

<sup>3</sup>http://www.dei.unipd.it/en/

<sup>4</sup>http://www.unipd.it/en/







(b) Botanical garden: parallel lecture room.



(c) Bo Palace: plenary lecture room.



(d) Bo Palace: parallel lecture room.

Figure 1: ECIR 2016 main venues.

#### 2.2 Venues

ECIR 2016 has been organized in three separate venues, shown in Figure 1: workshops and tutorials have been hosted at the Department of Geosciences; the first day of the conference has been hosted at the University of Padua Botanical Garden, which is the world's oldest academic botanical garden that is still in its original location; the other two days of the conference and the industry day have been hosted at the Bo Palace, the main historical building of the University of Padua.

### 2.3 Social Programme

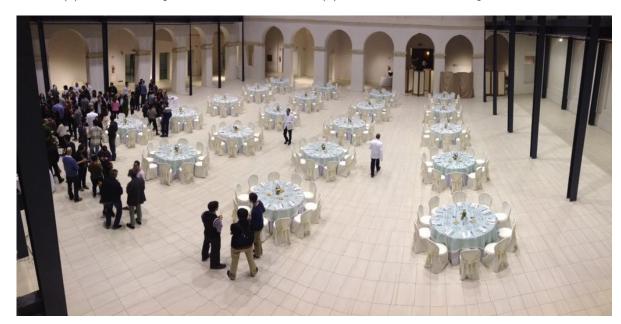
ECIR 2016 featured a very rich social program. The Welcome Reception on Sunday evening offered the merry environment of a little country festival, with typical local dishes, such as "porchetta" (Italian spit-roasted pork), hand made pizza, and draft beer. The poster session and the reception on Monday evening were hold at Caffè Pedrocchi, one of the most important historical cafes





(a) Welcome reception.

(b) Poster session and reception.



(c) Social dinner.

Figure 2: ECIR 2016 social events.

in Italy, inaugurated in 1831, keeping a mixture of neoclassic and neo-Gothic styles. Since its opening, the Caffè Pedrocchi welcomes eminent guests such as the writer Stendhal, who named its desserts as some of the best he ever tried, as well as students who always spent hours in the reading room discussing all sorts of matters, sometimes producing innovative ideas, sometimes the revolution, as they did in 1848 during Asburgic domination. Here, in the Rossini room, dedicated to the composer Rossini, after the Poster session, ECIR 2016 participants were greeted with the typical north-eastern Italian wine "Prosecco" and a dinner with Italian cheeses, cured meats, shellfish, and other Italian culinary specialities. Finally, the social dinner was hosted at the "San Gaetano" Cultural Centre, built in 2008 renovating the old city courthouse. The Cultural Centre is a modern five-storeyed structure, which preserves ancient signs of old city: the excavation made in order to create the basement places revealed late medieval pavements and a considerable amount of archaeological findings stratified from the Renaissance back to the Roman age, partially visible in the foyer. The social dinner was prepared by one of the best caterers in town and gave participants the opportunity to taste fine Italian ingredients, dishes, wines and dozens of different types of "grappa".

### 3 Keynotes

ECIR 2016 included three keynotes: two keynotes were the Karen Spärck Jones (KSJ) Award ones – Jordan Boyd-Graber (University of Colorado, USA) and Emine Yilmaz (University College London, UK) – while the third keynote, Domonkos Tikk (Gravity R&D, Hungary), was part of the industry day.

### 3.1 Machine Learning Shouldn't be a Black Box

Jordan Boyd-Graber gave the first KSJ keynote, entitled "Machine Learning Shouldn't be a Black Box". Machine learning is ubiquitous: detecting spam e-mails, flagging fraudulent purchases, and providing the next movie in a Netflix binge. But few users at the mercy of machine learning outputs know what's happening behind the curtain. Jordan Boyd-Graber tried to demystify the black box for non-experts by creating algorithms that can inform, collaborate with, compete with, and understand users in real-world settings, providing several examples ranging from topic models, simultaneous machine interpretation in translation, and language-based games in diplomacy, politics, and trivia.

### 3.2 A Task-Based Perspective to Information Retrieval

Emine Yilmaz gave the second KSJ keynote, entitled "A Task-Based Perspective to Information Retrieval". Ideally, an information retrieval system should be able to understand the reason that caused the user to submit a query and it should help the user achieve the actual task by guiding her through the steps (or subtasks) that need to be completed. Devising task based information retrieval systems have several challenges that have to be tackled and Emine Yilmaz described them, in comparison and contrast with the traditional way in building information retrieval systems. The main challenges to be faced are: (1) devising methodologies for accurately extracting and representing tasks, (2) building and designing new interfaces for task based information retrieval

systems, (3) devising methodologies for evaluating the quality of task based information retrieval systems, and (4) task based personalization of information retrieval systems.

## 3.3 Lessons Learned at Building Recommendation Services in Industry Scale

Domonkos Tikk gave the industry keynote, entitled "Lessons learnt at building recommendation services in industry scale". He has shown how Gravity's recommendation technology, top contender in Netflix, has evolved from the big pile of task specific program codes to scalable services that serve billions of recommendation requests monthly. Having academic origin with strong research focus, the recommendation quality has always been the primary differentiating factor at Gravity but, over times, they also learnt that machine learning competitions are different from scalable and robust services. Therefore, Domonkos Tikk discussed and presented some lessons learnt on this road to create a solution from a offspring of the Netflix competition.

### 4 Programme

ECIR 2016 received a total of 284 submissions in three categories: 201 full papers out of which 7 papers in the Reproducibility track, 66 short papers, and 17 demonstrations.

The geographical distribution of the submissions was as follows: 51% were from Europe, 21% from Asia, 19% from North and South America, 7% from North Africa and the Middle East, and 2% from Australasia.

All submissions were reviewed by at least three members of an international two-tier Program Committee. Of the full papers submitted to the conference, 42 were accepted for oral presentation (22% of the submitted ones) and 8 as posters (4% of the submitted ones). Of the short papers submitted to the conference, 20 were accepted for poster presentation (30% of the submitted ones). In addition, 6 demonstrations (35% of the submitted ones) were accepted. The accepted contributions represent the state of the art in information retrieval, cover a diverse range of topics, propose novel applications, and indicate promising directions for future research. Figure 3 provides a break-down of the submitted and accepted papers and demos by country and highlights the global reach of ECIR as a premier international conference.

ECIR 2016 continued the Reproducibility track introduced in ECIR 2015 which specifically invited the submission of papers reproducing a single paper or a group of papers from a third party, where the authors were not directly involved in the original paper. Authors were requested to emphasize the motivation for selecting the papers to be reproduced, the process of how results were attempted to be reproduced (successfully or not), the communication that was necessary to gather all information, the potential difficulties encountered, and the result of the process. Of the 7 papers submitted to this track, 4 were accepted (57% of the submitted ones).

The Programme Committee consisted of 183 members, 21 of which were Meta-Reviewers and 162 of which were Reviewers. 59 Additional Reviewers entered some reviews on behalf of a Reviewer. The full paper decisions were made based on a two-tier review process involving both Reviewers and Meta-Reviewers, while the decisions on the short papers and demos were made based only on reviews.

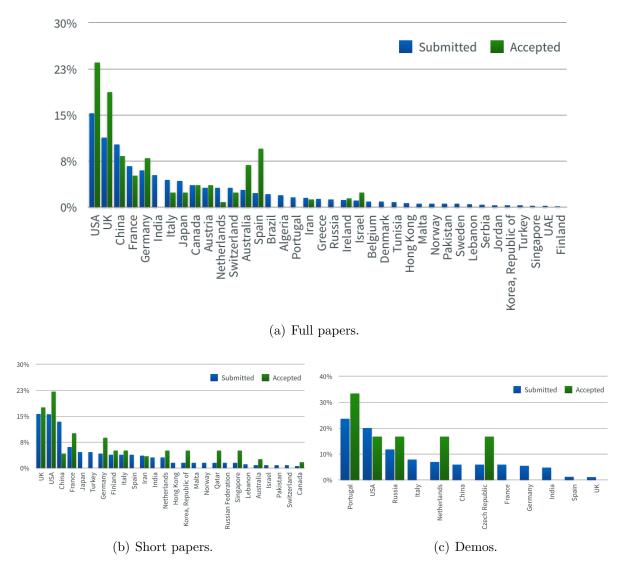


Figure 3: Breakdown of submitted and accepted papers by country.

A panel on "Data-driven Information Retrieval" was organized at ECIR by Maristella Agosti (University of Padua, Italy) with Omar Alonso (Microsoft Bing, USA), Raffaele Perego, (ISTI CNR, Italy), and Maarten de Rijke (University of Amsterdam, The Netherlands) as panelists. The panel stems from the fact that IR has been always concerned with finding the "needle in a haystack" to retrieve the most relevant information from huge amounts of data, able to best address user information needs. Nevertheless, nowadays we are facing a radical paradigm shift, common also to many other research fields, and IR is becoming a more and more data-driven science due, for example, to recent developments in machine learning, crowd-sourcing, user interaction analysis, and so on. The goal of the panel is to discuss the emergent trends in this area, their advantages, their pitfalls, and their implications for the future of the field.

Finally, two moments have been dedicated to the "Women in IR" meeting and discussions – one during the coffe break in the afternoon of the first day of the conference and the other during

the lunch of the second day of the conference. In order to give visibility to these events and solicit awareness in the community, the participants met around an ECIR 2016 totem dedicated to Elena Lucrezia Cornaro Piscopia, the first woman in the world to receive an academic degree at the University of Padua in 1678.

#### 5 Awards

#### 5.1 Test of Time Award

Considering the long history of ECIR, which is now at it 38th edition, ECIR 2016 introduced a new award, the Test of Time (ToT) Award, to recognize research that has had long-lasting influence, including impact on a subarea of information retrieval research, across subareas of information retrieval research, and outside of the information retrieval research community (e.g. non-information retrieval research or industry).

The ECIR ToT Award went to Cyril Goutte and Eric Gaussier for the paper entitled "A Probabilistic Interpretation of Precision, Recall and F-Score, with Implication for Evaluation" presented at ECIR 2005 [5].

There were also two honorable mentions: Giambattista Amati, Claudio Carpineto, Giovanni Romano for the paper entitled "Query Difficulty, Robustness, and Selective Application of Query Expansion" presented at ECIR 2004 [1]; and, Iadh Ounis, Gianni Amati, Vassilis Plachouras, Ben He, Craig Macdonald, Douglas Johnson for the poster entitled "Terrier Information Retrieval Platform" presented at ECIR 2005 [7].

The ToT Award Committe was chaired by Norbert Fuhr (University of Duisburg-Essen, Germany) and its members were: Maristella Agosti (University of Padua, Italy), Pia Borlund (University of Copenhagen, Denmark), Djoerd Hiemstra (University of Twente, The Netherlands), Kalervo Järvelin (University of Tampere, Finland), Gabriella Kazai (Lumi.do, UK), Iadh Ounis (University of Glasgow, UK), and Jacques Savoy (University of Neuchatel, Switzerland). The ToT Award has been supported by Springer.

### 5.2 Best Paper Award

The Best Paper Award went to Mengdie Zhuang, Elaine G. Toms, and Gianluca Demartini for the paper entitled "The Relationship between User Perception and User Behaviour in Interactive Information Retrieval Evaluation" [10].

There were also three honorable mentions: Liora Braunstain, Oren Kurland, David Carmel, Idan Szpektor, and Anna Shtok for the paper entitled "Supporting Human Answers for Advice-Seeking Questions in CQA Sites" [2]; Anjie Fang, Craig Macdonald, Iadh Ounis, and Philip Habel for the paper entitled "Topics in Tweets: A User Study of Topic Coherence Metrics for Twitter Data" [3]; and, Johannes Jurgovsky, Michael Granitzer, and Christin Seifert for the paper entitled "Evaluating Memory Efficiency and Robustness of Word Embeddings" [6].

The Best Paper Award Committee was chaired by Jaap Kamps (University of Amsterdam, The Netherlands) and its members were: Charles L.A. Clarke (University of Waterloo, Canada) and Jussi Karlgren (Gavagai, Sweden). The Best Paper Award has been supported by Yahoo!.

During the poster and demo session, participants have been asked to vote for the best poster and the best demo. The best poster was awarded to Martin Potthast, Sebastian Kpsel, Benno Stein and Matthias Hagen for the poster entitled "Clickbait Detection" [8]; the best demo was awarded to Pedro Saleiro, Jorge Teixeira, Carlos Soares and Eugénio Oliveira for the demo entitled "TimeMachine: Entity-centric Search and Visualization of News Archives" [9].

#### 6 Tutorials

## 6.1 Collaborative Information Retrieval: Concepts, Models and Evaluation

Recent work have shown the potential of collaboration for solving complex or exploratory search tasks allowing to achieve synergistic effects with respect to individual search, which is the prevalent information retrieval (IR) setting this last decade. An important challenge is related to the design of Collaborative Information Retrieval (CIR) models and their effectiveness evaluation since individual IR frameworks and measures do not totally fit with the collaboration paradigms. The CIR tutorial presented first a general overview of collaborative search introducing the main underlying notions. Then, it focused on related work dealing with collaborative ranking models and their effectiveness evaluation.

# 6.2 Group Recommender Systems: State of the Art, Emerging Aspects and Techniques, and Research Challenges

A recommender system aims at suggesting to users items that might interest them and that they have not considered yet. A class of systems, known as group recommendation, provides suggestions in contexts in which more than one person is involved in the recommendation process. The tutorial provided the audience with an overview on group recommendation, illustrating the recommender system principles. It then formally introduced the problem of producing recommendations to groups, and presented a survey based on the tasks performed by these systems. It also analyzed challenging topics like their evaluation and present emerging aspects and techniques in this area.

### 6.3 Living Labs for Online Evaluation: From Theory to Practice (LiLa2016)

Experimental evaluation has always been central to Information Retrieval research. The field is increasingly moving towards online evaluation, which involves experimenting with real, unsuspecting users in their natural task environments, a so-called living lab. Specifically, with the recent introduction of the Living Labs for IR Evaluation initiative at CLEF and the OpenSearch track at TREC, researchers can now have direct access to such labs. With these benchmarking platforms in place, online evaluation will be an exciting area to work on in the future. This half-day tutorial aimed to provide a comprehensive overview of the underlying theory and complement it with practical guidance.

# 6.4 Real-Time Bidding based Display Advertising: Mechanisms and Algorithms (RTBMA 2016)

Real-Time Bidding (RTB), which allows selling and buying in real-time one ad impression at a time. The ability of making impression level bid decision and targeting to an individual user in real-time has fundamentally changed the landscape of the digital media. The further demand for automation, integration and optimisation in RTB brings new research opportunities in the IR fields, including information matching with economic constraints, CTR prediction, user behaviour targeting and profiling, personalised advertising, and attribution and evaluation methodologies. The tutorial teamed up presenters from both the industry and academia and it brought the insightful knowledge from the real-world systems, by providing an overview of the fundamental mechanism and algorithms with the focus on the IR context.

### 7 Workshops

## 7.1 3rd International Workshop on Bibliometric-enhanced Information Retrieval (BIR2016)

The BIR workshop brought together experts in Bibliometrics and Information Retrieval. First, both communities only partly overlap, albeit sharing various interests. Second, it is profitable for both sides to tackle some of the emerging problems that scholars face today when they have to identify relevant and high quality literature in the fast growing number of electronic publications available worldwide. Bibliometric techniques are not yet used widely 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 third BIR workshop aimed to foster a common ground for the incorporation of bibliometric-enhanced services into scholarly search engine interfaces. In particular it addressed specific communities and studies on large, cross-domain collections like Mendeley and ResearchGate.

# 7.2 1st International Workshop on Modeling, Learning and Mining for Cross/Multilinguality (MultiLingMine 2016)

The increasing availability of text information coded in many different languages poses new challenges to modern information retrieval and mining systems in order to discover and exchange knowledge at a larger world-wide scale. The 1st International Workshop on Modeling, Learning and Mining for Cross/Multilinguality (dubbed MultiLingMine 2016) provided a venue to discuss research advances in cross-/multilingual related topics, focusing on new multidisciplinary research questions that have not been deeply investigated so far (e.g., in CLEF and related events relevant to CLIR). This included theoretical and experimental on-going works about novel representation models, learning algorithms, and knowledge-based methodologies for emerging trends and applications, such as, e.g., cross-view cross-/multilingual information retrieval and document mining, (knowledge-based) translation-independent cross-/multilingual corpora, applications in social network contexts, and more.

# 7.3 ProActive Information Retrieval: Anticipating Users' Information Needs (ProAct IR)

Given the increasing popularity of smartphones and Internet enabled wearable devices, how can the information retrieval systems use the additional data, and better interact with the user so as to better understand, and even anticipate her precise information needs? Building such zero query or minimum user effort systems require research efforts from multiple disciplines covering algorithmic aspects of retrieval models, user modeling and profiling, evaluation, context modeling, novel user interfaces design, etc. The ProAct IR workshop gathered together the researchers from academia and industry practitioners with these diverse backgrounds to share their experiences and opinions on challenges and possibilities of developing such proactive information retrieval systems.

# 7.4 1st International Workshop on Recent Trends in News Information Retrieval (NewsIR'16)

The news industry has gone through seismic shifts in the past decade with digital content and social media completely redefining how people consume news. Readers check for accurate fresh news from multiple sources throughout the day using dedicated apps or social media on their smartphones and tablets. At the same time, news publishers rely more and more on social networks and citizen journalism as a frontline to breaking news. In this new era of fast-growing instant news delivery and consumption, publishers and aggregators have to overcome a great number of challenges. These include the verification or assessment of a source's reliability; the integration of news with other sources of information; real-time processing of both news content and social streams in multiple languages, in different formats and in high volumes; deduplication; entity detection and disambiguation; automatic summarization; and news recommendation.

The NewsIR stimulated discussion around new and powerful uses of IR applied to news sources and the intersection of multiple IR tasks to solve real user problems. To promote research efforts in this area, NewsIR released a new dataset consisting of one million news articles to the research community and introduced a data challenge track as part of the workshop.

### 8 Industry Day

The goal of the Industry Day track was to bring an exciting programme that contained a mix of invited talks by industry leaders with presentations of novel and innovative ideas from the search industry. The final program consisted of invited talks and accepted proposal talks.

The invited invited talks were:

- Domonkos Tikk (Gravity), see Section 3.3 above;
- Etienne Sanson (Criteo), who presented an overview of the challenges R&D had to face over the last 10 years at Criteo;
- Debora Donato (StumbleUpon), who presented how to improve user engagement through genre diversification;

• Nicola Montecchio (Spotify), who presented music search, personalization and discovery at Spotify.

Four proposal talks were accepted but just three have been actually presented:

- "Worst Practices for Designing Production Information Access Systems" by Fernando Diaz (Microsoft Research NYC) who presented on the gap between studying and implementing information access systems. Fernando's presentation covered open problems in production systems that academia is better suited for addressing than industry;
- "Get on with it! Recommender system industry challenges move towards real-world, online evaluation" by Roberto Turrin (Moviri/ContentWise), Martha Larson (Delft University of Technology), and Daniel Kohlsdorf (XING);
- "Multilingual query categorization" by Michal Laclavik (Magnetic), Marek Ciglan (Magnetic), Sam Steingold (Magnetic), and Alex Dorman (Magnetic).

### 9 Student Support

ECIR has traditionally a strong focus on student participation. This year student support included a mentoring program and student grants.

The student mentorship was aimed to assist young authors in preparing papers for submission and improve quality of submissions. We invited about 30 researchers to participate as mentors and 21 students applied for the programme. Students submitted six full papers and four short papers to the conference. Both mentors and mentees regarded the program as satisfactory. One student paper was accepted to ECIR 2016 conference.

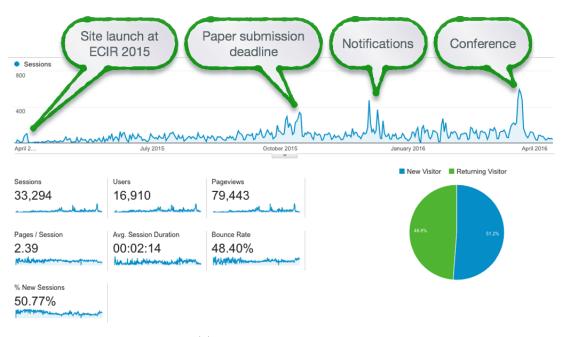
Student grant program included travel and accommodation grants supported by BCS and ELIAS. We received 34 grant applications in total and 27 students were granted with travel and accommodation support. Criteria for selection were: relevance of the research topic to ECIR; PhD year and track record (preference was given to students at an earlier stage of their career and with evidence of an exceptionally strong track record); presentation of a full/short/demo paper; strong letter of support. Preference was given to full-time students studying/working in developing countries and presenting their work and to those who had no alternative travel support.

The Student Grant Committee was chaired by John Tait (JohnTait.net, UK) and its members were: Jaime Arguello (UNC Chapel Hill, USA), Pavel Braslavski (Ural Federal University / Kontur Labs, Russian Federation), Jaap Kamps (University of Amsterdam, The Netherlands), Diane Kelly (University of North Carolina, USA), Mihai Lupu (Vienna University of Technology, Austria), and Nils Pharo (Oslo and Akershus University College of Applied Sciences, Norway).

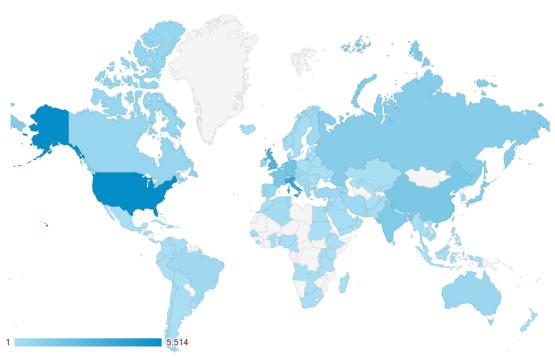
### 10 Communication and Media

The ECIR 2016 Web site has been launched at ECIR 2015 and provided all the necessary information about the conference, its program and its logistics.

Figure 4 summarizes about one year of activity of the ECIR 2016 Web site, from its launch at ECIR 2015 in April 2015 to April 2016. The site has been visited by about 17,000 users, amounting



(a) Web site access statistics.



(b) Geographic distribution of Web site accesses.

Figure 4: Participants survey results.

to around 33,000 session and 80,000 page views. The geographic distribution of the accesses shows how ECIR has attracted interest from most of the countries in the world, confirming its global reach.

ECIR 2016 had a presence on Twitter with the account @ecir2016 and the hashtag #ecir2016, followed by 468 followers.

The main plenary sessions (opening, keynote talks, panel, and closing) were live streamed and are now available online at:

- http://ecir2016.dei.unipd.it/video/opening
- http://ecir2016.dei.unipd.it/video/ksj-keynote-jordan-boyd-graber
- http://ecir2016.dei.unipd.it/video/ksj-keynote-emine-yilmaz
- http://ecir2016.dei.unipd.it/video/industry-keynote-domonkos-tikk
- http://ecir2016.dei.unipd.it/video/panel-data-driven-ir
- http://ecir2016.dei.unipd.it/video/closing

Overall, in less than one month, since late March 2016 to mid April 2016, they have been watched around 2,000 times.

The photo stream of the conference is available at the following address: http://ecir2016.dei.unipd.it/photo-stream.

### 11 Final Remarks

At the end of the conference, and in the subsequent days, we conducted a survey among the participants to ECIR 2016 to gather their feedback and opinion on different aspects of the conference and its organization. A total of 115 participants answered the survey and the results are summarized in Figure 5. The overall impression on ECIR 2016 was positive or more than positive for 96% of the participants and 90% or more of the participants were satisfied or very satisfied with all the different aspects of the conference, detailed in Figure 5.

ECIR 2016 introduced, for the first time, the Test of Time Award in order assess the maturity and impact of the scientific production of its community. Moreover, ECIR 2016 continued an innovation introduced at ECIR 2015, namely the Reproducibility Track, in order to stress the importance of the methodologies we adopt to conduct our experiment as well as to share and analyze their results.

ECIR 2017<sup>5</sup> will be held in Aberdeen, UK, from 8th to 13th April 2017, hosted by Robert Gordon University (RGU) and AECC (Aberdeen Exhibition and Conference Centre).

<sup>&</sup>lt;sup>5</sup>http://ecir2017.org/

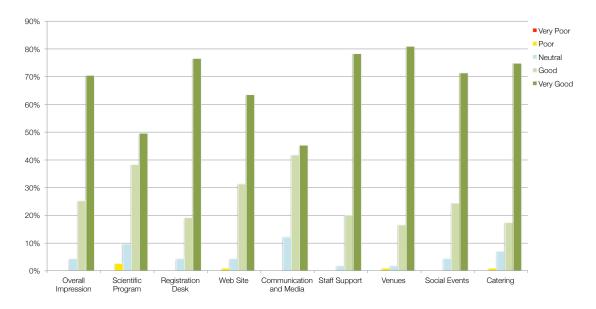


Figure 5: Participants survey results.

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