

July 10–13, 2016
Halifax, Nova Scotia, Canada



Association for
Computing Machinery

Advancing Computing as a Science & Profession



HT'16

Proceedings of the 27th ACM Conference on
Hypertext and Social Media

Sponsored by:

ACM SIGWEB

In-cooperation with:

ACM SIGCHI

Supported by:

Dalhousie University and Nova Scotia College of Art & Design



**Association for
Computing Machinery**

Advancing Computing as a Science & Profession

**The Association for Computing Machinery
2 Penn Plaza, Suite 701
New York, New York 10121-0701**

Copyright © 2016 by the Association for Computing Machinery, Inc. (ACM). Permission to make digital or hard copies of portions of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyright for components of this work owned by others than ACM must be honored. Abstracting with credit is permitted. To copy otherwise, to republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permission to republish from: permissions@acm.org or Fax +1 (212) 869-0481.

For other copying of articles that carry a code at the bottom of the first or last page, copying is permitted provided that the per-copy fee indicated in the code is paid through www.copyright.com.

Notice to Past Authors of ACM-Published Articles

ACM intends to create a complete electronic archive of all articles and/or other material previously published by ACM. If you have written a work that has been previously published by ACM in any journal or conference proceedings prior to 1978, or any SIG Newsletter at any time, and you do NOT want this work to appear in the ACM Digital Library, please inform permissions@acm.org, stating the title of the work, the author(s), and where and when published.

ISBN: 978-1-4503-4247-6

ACM Order No: 614162

Additional copies may be ordered prepaid from:

ACM Order Department
PO Box 30777
New York, NY 10087-0777, USA

Phone: 1-800-342-6626 (USA and Canada)
+1-212-626-0500 (Global)
Fax: +1-212-944-1318
E-mail: acmhelp@acm.org
Hours of Operation: 8:30 am – 4:30 pm ET

Printed in the USA .

Preface

Welcome to the 27th ACM Conference on Hypertext and Social Media, Hypertext 2016, in Halifax, Nova Scotia, Canada. The Hypertext conference series is concerned with all aspects of modern hypertext research, including social media, the user experience, the semantic web, adaptive hypertext and hypermedia, as well as narrative systems and applications.

The ACM Hypertext 2016 conference invited submissions in three main tracks: Collaboration in the Social Web; Narrative, Adaptation and Multimedia Storytelling; and User Experience and the Web. We also welcomed submissions in additional categories including the new Creative track, as well as to the well-established categories of late-breaking results and demonstrations, plus papers submitted to the satellite events, the workshops and the doctoral consortium.

Collaboration in the Social Web focuses on the analysis and exploration of links between topics, people and activities in social media and beyond, including social groupware, which integrates social media interaction into a structured collaboration process and adds various structure and computational support to social media. Such collaboration could be with the use of existing social media systems as a communication or collaboration platform, or with new systems, applications, methods, practices and tools that support communication and collaboration in the Social Web.

Through *Narrative, Adaptation and Multimedia Storytelling*, we acknowledge that hypertext and Web systems are fundamentally about communication between people, and that people are storytellers. The track covers a broad range of topics in New Media and digital storytelling, from both technological and human points of view. This area includes technologies to support content curation and creation, dynamic linking and navigation, as well as data analysis, interactive visualization and presentation, and novel forms of digital narratives. It also includes exploration of existing practices of online storytelling, plus new media artistry and writing, online reportage and journalism, applications of digital storytelling, and critical theory around online expression.

The track *User Experience and the Web* is a recognition that navigating through the abundance of information on the Web is a complex cognitive and interactive process involving several factors, many of which are not well-understood. The track focuses on interdisciplinary efforts from several disciplines, such as cognitive psychology, cognitive science, Web design, human-computer interaction, information science, artificial intelligence, machine learning and recognises that other aspects of computer science as well as hypertext are needed to make interaction with the Web as easy and effortless as possible.

We received 76 submissions, comprising 54 full papers, 18 short papers and 4 posters. Each submission was reviewed by at least three programme committee members, followed by a metareview by the track chairs, who recommended acceptance or rejection of the papers. In some cases, full paper submissions were accepted as short papers, and promising submissions that were not sufficiently mature have been accepted as posters. The final decisions were taken by the programme chairs, with the exception of submissions with one of the organizing team's members involved, which were handled separately by the remaining programme/general chairs. We accepted 16 regular papers, 23 short papers and 7 posters, which are included in the main proceedings. The Extended Proceedings contain a selection of submissions to the Creative track, late-breaking results, demonstrations, doctoral consortium papers and workshop papers. The conference will make two awards, these being the Douglas Engelbart Best Paper Award and the Ted Nelson Newcomer Award. Three candidates for each award have been selected by the chairs and the winners will be selected during the conference by an awards committee.

We are pleased to host two keynote speakers who beautifully complement our technical programme, with blogger Hossein Derakhshan providing a unique perspective on the changes in how people use social media, and Katy Börner from the Indiana University Bloomington with her remarkable scientific visualisation ideas.

In closing, we wish to thank our fellow chairs for shaping this conference, the programme committee and the sub-reviewers for their insightful reviews, and to the ACM staff for its support of organizational issues. The Hypertext 2016 conference, and its workshops, tutorials, keynotes, social activities and student grants, have been made possible through the sponsorship of ACM SIGWEB. Finally, we wish to thank the authors of all submitted works as your participation is what makes this conference a success!

James Blustein

*HT'16 General Chair
Dalhousie University, Canada*

Jessica Rubart

*HT'16 Programme Chair
Ostwestfalen-Lippe University of Applied Sciences,
Germany*

Eelco Herder

*HT'16 General Chair
L3S Research Center, Germany*

Helen Ashman

*HT'16 Programme Chair
University of South Australia*

Table of Contents

Hypertext 2016 Conference Organization	ix
---	-----------

Hypertext 2016 Sponsor & Supporters	xii
--	------------

Keynotes

• Data Visualization Literacy	1
<i>Katy Börner (Indiana University, University of Duisburg-Essen & Royal Netherlands Academy of Arts and Sciences)</i>	
• Killing the Hyperlink, Killing the Web: The Shift from Library-Internet to Television-Internet	3
<i>Hossein Derakhshan (New Media Society)</i>	

Full Papers

• Extracting Social Structures from Conversations in Twitter: A Case Study on Health-Related Posts	5
<i>Abduljaleel Al-Rubaye, Ronaldo Menezes (Florida Institute of Technology)</i>	
• Trends in Eye Tracking Scanpaths: Segmentation Effect?	15
<i>Sukru Eraslan (University of Manchester & Middle East Technical University Northern Cyprus Campus), Yeliz Yesilada (Middle East Technical University Northern Cyprus Campus), Simon Harper (University of Manchester),</i>	
• Seven Words You Can't Say on Answerbag: Contested Terms and Conflict in a Social Q&A Community	27
<i>Rich Gazan (University of Hawaii)</i>	
• Assessing the Navigational Effects of Click Biases and Link Insertion on the Web	37
<i>Florian Geigl (Graz University of Technology), Kristina Lerman (University of Southern California), Simon Walk (Graz University of Technology), Markus Strohmaier (University of Koblenz-Landau & GESIS), Denis Helic (Graz University of Technology)</i>	
• Guiding Users through Asynchronous Meeting Content with Hypervideo Playback Plans	49
<i>Andreas Girgensohn, Jennifer Marlow (FX Palo Alto Laboratory), Frank Shipman (Texas A&M University), Lynn Wilcox (FX Palo Alto Laboratory)</i>	
• Patterns of Sculptural Hypertext in Location Based Narratives	61
<i>Charlie Hargood, Verity Hunt, Mark J. Weal, David E. Millard (University of Southampton)</i>	
• Teens Engage More with Fewer Photos: Temporal and Comparative Analysis on Behaviors in Instagram	71
<i>Jin Yea Jang (The Pennsylvania State University), Kyungsik Han (Pacific Northwest National Laboratory), Dongwon Lee, Haiyan Jia (The Pennsylvania State University), Patrick C. Shih (Indiana University)</i>	
• Friendship Maintenance and Prediction in Multiple Social Networks	83
<i>Ka-Wei Roy Lee, Ee-Peng Lim (Singapore Management University)</i>	
• Where is the Goldmine? Finding Promising Business Locations through Facebook Data Analytics	93
<i>Jovian Lin (National University of Singapore), Richard Oentaryo, Ee-Peng Lim, Casey Vu, Adrian Vu, Agus Kwee (Singapore Management University)</i>	
• Comparing Community-based Information Adoption and Diffusion Across Different Microblogging Sites	103
<i>Xiaozhong Liu (Indiana University Bloomington), Xing Yu (Indiana University Indianapolis), Zheng Gao (Indiana University Bloomington), Tian Xia (Renmin University of China), Johan Bollen (Indiana University Bloomington)</i>	

- **Assessing Review Recommendation Techniques under a Ranking Perspective** 113
Luciana B. Maroun, Mirella M. Moro, Jussara M. Almeida,
Ana Paula C. Silva (*Universidade Federal de Minas Gerais*)
- **Download and Cache Management for HTML5 Hypervideo Players** 125
Britta Meixner (*University of Passau & FX Palo Alto Laboratory, Inc.*),
Christoph Einsiedler (*University of Passau*)
- **Summarizing Situational Tweets in Crisis Scenario** 137
Koustav Rudra (*Indian Institute of Technology, Kharagpur, India*),
Siddhartha Banerjee (*The Pennsylvania State University*),
Niloy Ganguly, Pawan Goyal (*Indian Institute of Technology*),
Muhammad Imran, Prasenjit Mitra (*Qatar Computing Research Institute*)
- **Spatio-Temporal Parsing in Spatial Hypermedia** 149
Thomas Schedel, Claus Atzenbeck (*Hof University*)
- **Social Media-Based Collaborative Information Access:
Analysis of Online Crisis-Related Twitter Conversations** 159
Lynda Tamine (*University of Toulouse*), Laure Soulier (*Sorbonne Universités*),
Lamjed Ben Jabeur (*University of Toulouse 3*), Frederic Amblard, Chihab Hanachi (*University of Toulouse 1*),
Gilles Hubert (*University of Toulouse*), Camille Roth (*Centre Marc Bloch Berlin*)
- **Can Disputed Topic Suggestion Enhance User Consideration of Information
Credibility in Web Search?** 169
Yusuke Yamamoto, Satoshi Shimada (*Kyoto University*)

Short Papers

- **The Role of Comments' Controversy in Large-Scale Online Discussion Forums** 179
Adithya Aggarwal (*Arizona State University*), Claudia López (*Universidad Técnica Federico Santa María*),
I-Han Hsiao (*Arizona State University*)
- **Cross-system Recommendation: User-modelling via Social Media versus
Self-Declared Preferences** 183
Sultan Alanazi, James Goulding, Derek McAuley (*University of Nottingham*)
- **Identifying Knowledge Anchors in a Data Graph** 189
Marwan Al-Tawil, Vania Dimitrova (*University of Leeds*), Dhavalkumar Thakker (*University of Bradford*),
Brandon Bennett (*University of Leeds*)
- **The Effect of Synonym Substitution on Search Results** 195
Michael Antunovic, Ivan Lee, Helen Ashman (*University of South Australia*)
- **Storyspace 3** 201
Mark Bernstein (*Eastgate Systems*)
- **Classical Hypermedia Virtues on the Web with Webstrates** 207
Niels Olof Bouvin (*Aarhus University*), Clemens Nylandsted Klokmoose (*Aarhus University*)
- **ALAT: Finally an Easy To Use Adaptation Authoring Tool** 213
Paul De Bra, Natalia Stash, Wouter Boereboom, Celine Chen (*Eindhoven University of Technology*),
Joris Den Ouden, Martijn Kunstman, John Oostrum, Egon Verbakel (*de Roode Kikker*)
- **Mining Interaction Patterns in the Design of Web Applications for Improving
User Experience** 219
Vassiliki Gkantouna, Athanasios Tsakalidis (*University of Patras*),
Giannis Tzimas (*Technological Educational Institute of Western Greece*)
- **Issue-Focused Documentaries versus Other Films: Rating and Type Prediction
based on User-Authored Reviews** 225
Ming Jiang, Jana Diesner (*University of Illinois at Urbana-Champaign*)
- **Approximate Contagion Model of Common Knowledge on Facebook** 231
Gizem Korkmaz, Chris J. Kuhlman (*Virginia Tech*), S. S. Ravi (*University at Albany-SUNY*),
Fernando Vega-Redondo (*Bocconi University*)

• The Influence of Frequency, Recency and Semantic Context on the Reuse of Tags in Social Tagging Systems	237
Dominik Kowald, Elisabeth Lex (<i>Graz University of Technology</i>)	
• Understanding and Predicting Online Food Recipe Production Patterns	243
Tomasz Kusmierczyk (<i>NTNU</i>), Christoph Trattner (<i>Know-Center</i>), Kjetil Nørkvåg (<i>NTNU</i>)	
• High Enough? Explaining and Predicting Traveler Satisfaction Using Airline Reviews	249
Emanuel Lacic, Dominik Kowald, Elisabeth Lex (<i>Graz University of Technology</i>)	
• Using Online Controlled Experiments to Examine Authority Effects on User Behavior in Email Campaigns	255
Kwan Hui Lim (<i>The University of Melbourne & Singapore Management University</i>), Ee-Peng Lim (<i>Singapore Management University</i>), Binyan Jiang (<i>Hong Kong Polytechnic University & Carnegie Mellon University</i>), Palakorn Achananuparp (<i>Singapore Management University</i>)	
• What Happens Offline Stays Offline? Examining Sustainability of a Hybrid Social System	261
Rosta Farzan, Di Lu, Yu-Ru Lin (<i>University of Pittsburgh</i>)	
• Development of Failure Detection System for Network Control using Collective Intelligence of Social Networking Service in Large-Scale Disasters	267
Chihiro Maru (<i>Ochanomizu University</i>), Miki Enoki (<i>IBM</i>), Akihiro Nakao, Shu Yamamoto (<i>University of Tokyo</i>), Saneyasu Yamaguchi (<i>Kogakuin University</i>), Masato Oguchi (<i>Ochanomizu University</i>)	
• Analyzing the Perceptions of Change in a Distributed Collection of Web Documents	273
Luis Meneses, Sampath Jayarathna, Richard Furuta, Frank Shipman (<i>Texas A&M University</i>)	
• There is Something Beyond the Twitter Network	279
Andrzej Pacuk, Piotr Sankowski, Karol Węgrzycki, Piotr Wygocki (<i>University of Warsaw</i>)	
• Exploring Maintenance Practices in Crowd-Mapping	285
Giovanni Quattrone, Martin Dittus, Licia Capra (<i>University College of London</i>)	
• Classification of Twitter Accounts into Targeting Accounts and Non-Targeting Accounts	291
Hikaru Takemura, Keishi Tajima (<i>Kyoto University</i>)	
• A Fuzzy-Based Personalized Recommender System for Local Businesses	297
Chun-Hua Tsai (<i>University of Pittsburgh</i>)	
• Search Tactics of Images' Textual Descriptions	303
Yi-Ling Lin, Wen-Lin Lan, Ren-Yi Hong (<i>National Sun Yat-Sen University</i>), I-Han (Sharon) Hsiao (<i>Arizona State University</i>)	
• Human vs. Automated Text Analysis: Estimating Positive and Negative Affect	309
Kathryn Schaefer Ziemer, Gizem Korkmaz (<i>Virginia Tech</i>)	

Posters

• Framework for Sentiment Analysis of Arabic Text	315
Latifah Almuqren, Alexandra I. Cristea (<i>Warwick University</i>)	
• A New Hierarchical Clustering Algorithm to Identify Non-overlapping Like-minded Communities	319
Talasila Sai Deepak (<i>Google</i>), Hindol Adhya, Shyamal Kejriwal, Bhanuteja Gullapalli, Saswata Shannigrahi (<i>IIT Guwahati</i>)	
• A Comparative Study of Visual Cues for Adaptive Navigation Support	323
Roya Hosseini, Peter Brusilovsky (<i>University of Pittsburgh</i>)	
• E3: Keyphrase based News Event Exploration Engine	327
Nikita Jain, Swati Gupta, Dhaval Patel (<i>Indian Institute of Technology Roorkee</i>)	

• Understanding Language Diversity in Local Twitter Communities	331
Amr Magdy (<i>University of Minnesota</i>), Thanaa M. Ghanem (<i>Metropolitan State University</i>), Mashaal Musleh (<i>Umm Al-Qura University</i>), Mohamed F. Mokbel (<i>University of Minnesota</i>)	
• The Influence of Features and Demographics on the Perception of Twitter as a Serendipitous Environment	333
Lori McCay-Peet (<i>Dalhousie University</i>), Anabel Quan-Haase (<i>Western University</i>)	
• Improving Website Navigation with the Wisdom of Crowds	337
Naureen Nizam (<i>University of Toronto</i>), Carolyn Watters (<i>Dalhousie University</i>), Anatoliy Gruzd (<i>Ryerson University</i>)	
Author Index	341

Hypertext 2016 Conference Organization

General Chairs: Jamie Blustein (*Dalhousie University, Canada*)
Eelco Herder (*L3S Research Center, Germany*)

Program Chairs: Jessica Rubart (*OWL University of Applied Sciences, Germany*)
Helen Ashman (*University of South Australia*)

Track Chairs: **Track 1: Collaboration in the Social Web**
Weigang Wang (*University of Manchester, United Kingdom*)
Track 2: Narrative, Adaptation and Multimedia Storytelling
David Millard (*University of Southampton, United Kingdom*)
Track 3: User Experience and the Web
Herre van Oostendorp (*Utrecht University, the Netherlands*)

Creative Track: Stacey Mason (*University of California, Santa Cruz, USA*)

Workshop Chair: Dongwon Lee (*Penn State University, USA*)

Poster and Demo Chairs: Kevin Koidl (*Trinity College Dublin, Ireland*)
Ben Steichen (*Santa Clara University, USA*)

Doctoral Consortium Chair: Johan Bollen (*Indiana University, USA*)

Publicity Chairs: Denis Parra (*Catholic University of Chile*)
Christoph Trattner (*Know-Center, Austria*)

Program Committee: Luca Maria Aiello (*Yahoo Labs, Spain*)
Franck Amadieu (*University of Toulouse, France*)
Kenneth Anderson (*University of Colorado at Boulder, USA*)
Claus Atzenbeck (*Hof University, Germany*)
Martin Atzmueller (*University of Kassel, Germany*)
Sören Auer (*University of Bonn & Fraunhofer LAIS, Germany*)
Shlomo Berkovsky (*CSIRO, Australia*)
Mark Bernstein (*Eastgate Systems, Inc., USA*)
Maria Bielikova (*Slovak University of Technology, Slovakia*)
Tom Blount (*University of Southampton, UK*)
Niels Olof Bouvin (*Aarhus University, Denmark*)
Peter Brusilovsky (*University of Pittsburgh, USA*)
Iván Cantador (*Autonomous University of Madrid, Spain*)
Ilknur Celik (*Middle East Technical University, Northern Cyprus*)
Federica Cena (*University of Torino, Italy*)
Aline Chevalier (*Université Toulouse, France*)
Alvin Chin (*BMW Group, USA*)
Jessie Chin (*University of Illinois at Urbana Champaign, USA*)

Program Committee Philippe Cudré-Mauroux (*University of Fribourg, Switzerland*)
(continued): Rosamund Davies (*University of Greenwich, UK*)
Paul De Bra (*Eindhoven University of Technology, the Netherlands*)
Jana Diesner (*University of Illinois at Urbana-Champaign, USA*)
Jérôme Dinet (*University of Lorraine, France*)
Geoffrey Draper (*Brigham Young University – Hawaii, USA*)
Rosta Farzan (*University of Pittsburgh, USA*)
Leo Ferres (*University of Concepción, Chile*)
Wai-Tat Fu (*University of Illinois, USA*)
Richard Furuta (*Texas A&M University, USA*)
Cristina Gena (*University of Torino, Italy*)
Stephen Griffin (*University of Pittsburgh, USA*)
Charlie Hargood (*University of Southampton, UK*)
Simon Harper (*University of Manchester, UK*)
Laura Hollink (*VU University Amsterdam, the Netherlands*)
Geert-Jan Houben (*TU Delft, the Netherlands*)
Yvonne Howard (*University of Southampton, UK*)
Prateek Jain (*BlackRock, USA*)
Mike Jewell (*University of Southampton, UK*)
Ion Juvina (*Wright State University, USA*)
Jaap Kamps (*University of Amsterdam, the Netherlands*)
Karanam Saraschandra (*Utrecht University, the Netherlands*)
Ricardo Kawase (*mobile.de GmbH / eBay Inc., Germany*)
Kathrin Kirchner (*Berlin School of Economics and Law, Germany*)
Muneo Kitajima (*Nagaoka University of Technology, Japan*)
Séamus Lawless (*Trinity College Dublin, Ireland*)
Vanessa Lopez (*IBM Research, Ireland*)
R. Ignacio Madrid (*ILUNION Technology & Accessibility, Spain*)
Judy Malloy (*Content | Code | Process, USA*)
Catherine Marshall (*Microsoft, USA*)
Nathan Mathias (*MIT Media Lab Center for Civic Media, USA*)
Robert Mertens (*HSW University of Applied Sciences, Germany*)
Alex Mitchell (*National University of Singapore, Singapore*)
Ethan Munson (*University of Wisconsin-Milwaukee, USA*)
Elli Mylonas (*Brown University, UK*)
Peter Nuernberg (*Xtructure, LLC, USA*)
Denis Parra (*Catholic University of Chile, Chile*)
Heiko Paulheim (*University of Mannheim, Germany*)
Jim Rosenberg
Seamus Ross (*University of Toronto, Canada*)
Harald Sack (*University of Potsdam, Germany*)
Ladislao Salmeron (*University of Valencia, Spain*)
Frank Shipman (*Texas A&M University, USA*)
Ray Siemens (*University of Victoria, Canada*)
Gerd Stumme (*University of Kassel, Germany*)

Program Committee Christoph Trattner (*KMI, Graz University of Technology, Austria*)
(continued): Andre Tricot (*LTC, France*)
 Jacco van Ossenbruggen (*CWI & VU University Amsterdam, the Netherlands*)
 Paul van Schaik (*Teesside University, UK*)
 Julita Vassileva (*University of Saskatchewan, Canada*)
 Suzan Verberne (*Radboud University Nijmegen, the Netherlands*)
 Martin Vesely (*École Polytechnique Fédérale de Lausanne, Switzerland*)
 Fabio Vitali (*University of Bologna, Italy*)
 Wenbo Wang (*Kno.e.sis Center, Wright State University, USA*)
 Mark Weal (*University of Southampton, USA*)
 Uffe Wiil (*University of Southern Denmark, Denmark*)
 Jane Yellowlees Douglas (*University of Florida, Warrington College of Business, USA*)
 Yeliz Yesilada (*Middle East Technical University, Northern Cyprus*)
 Yan Zhang (*University of Texas at Austin, USA*)
 Jörg Zumbach (*School of Education, University of Salzburg, Austria*)

Additional reviewers: Jae-Wook Ahn
 Shaikhah Alotaibi
 Judie Attard
 Diego Collarana
 Evandro Costa
 Ming Jiang
 Mark Kibanov
 Magnus Knuth
 Thomas Largillier
 Di Lu
 Shubhanshu Mishra
 Robert Moro
 Shaghayegh Sahebi
 Emilio Sulis
 Tabea Tietz
 Joerg Waitelonis

Hypertext 2016 Sponsor & Supporters

Sponsor:



In-cooperation with:



Supporters:



Dalhousie University, Halifax,
Canada



Nova Scotia College of Art
& Design, Halifax, Canada