

PDF hosted at the Radboud Repository of the Radboud University Nijmegen

The following full text is a publisher's version.

For additional information about this publication click this link.

<http://hdl.handle.net/2066/207819>

Please be advised that this information was generated on 2021-10-20 and may be subject to change.

Article 25fa pilot End User Agreement

This publication is distributed under the terms of Article 25fa of the Dutch Copyright Act (Auteurswet) with explicit consent by the author. Dutch law entitles the maker of a short scientific work funded either wholly or partially by Dutch public funds to make that work publicly available for no consideration following a reasonable period of time after the work was first published, provided that clear reference is made to the source of the first publication of the work.

This publication is distributed under The Association of Universities in the Netherlands (VSNU) 'Article 25fa implementation' pilot project. In this pilot research outputs of researchers employed by Dutch Universities that comply with the legal requirements of Article 25fa of the Dutch Copyright Act are distributed online and free of cost or other barriers in institutional repositories. Research outputs are distributed six months after their first online publication in the original published version and with proper attribution to the source of the original publication.

You are permitted to download and use the publication for personal purposes. All rights remain with the author(s) and/or copyrights owner(s) of this work. Any use of the publication other than authorised under this licence or copyright law is prohibited.

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please contact the Library through email: copyright@ubn.ru.nl, or send a letter to:

University Library
Radboud University
Copyright Information Point
PO Box 9100
6500 HA Nijmegen

You will be contacted as soon as possible.

LILE2019: 8th International Workshop on Learning and Education with Web Data

Ran Yu
ran.yu@gesis.org
GESIS - Leibniz Institute for the
Social Sciences, Germany

Mathieu d'Aquin
mathieu.daquin@insight-centre.org
National University of Galway,
Ireland

Dragan Gasevic
dgasevic@acm.org
Monash University, Australia

Joachim Kimmerle
j.kimmerle@iwm-tuebingen.de
Leibniz-Institut für Wissensmedien &
Eberhard Karls University Tübingen,
Germany

Eelco Herder
eelcoherder@acm.org
Radboud University in Nijmegen, the
Netherlands

Ralph Ewerth
Ralph.Ewerth@tib.eu
Leibniz Universität Hannover &
Leibniz Information Centre for
Science and Technology, Germany

ABSTRACT

The purpose of the LILE2019 workshop is to provide an interdisciplinary forum for researchers and practitioners who make innovative use of Web data for educational purposes, spanning areas such as learning analytics, Web mining, data and Web science, psychology and the social sciences. The previous editions of the LILE workshop were successfully held at the ESWC, WWW, ISWC and WebSci conferences. LILE2019 consists of keynotes, presentations of accepted papers and posters and discussion.

CCS CONCEPTS

• **Human-centered computing** → **User models**; • **Computing methodologies** → *Supervised learning*; • **Applied computing** → *Interactive learning environments*.

KEYWORDS

online learning, educational data, learning analytics

ACM Reference Format:

Ran Yu, Mathieu d'Aquin, Dragan Gasevic, Joachim Kimmerle, Eelco Herder, and Ralph Ewerth. 2019. LILE2019: 8th International Workshop on Learning and Education with Web Data. In *11th ACM Conference on Web Science Companion (WebSci '19 Companion)*, June 30–July 3, 2019, Boston, MA, USA. ACM, New York, NY, USA, 2 pages. <https://doi.org/10.1145/3328413.3329404>

1 INTRODUCTION

Distance teaching and openly available educational resources on the Web are becoming common practices with public higher education institutions as well as private training organizations. In addition, informal learning and knowledge exchange are inherent to the daily online interactions, when searching the Web or using learning and knowledge-related social networks, such as Bibsonomy, Slideshare, Wikipedia or Videlectures, or general purpose social environments, such as LinkedIn, where matters related to

Permission to make digital or hard copies of part or all 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. Copyrights for third-party components of this work must be honored. For all other uses, contact the owner/author(s).

WebSci '19 Companion, June 30–July 3, 2019, Boston, MA, USA

© 2019 Copyright held by the owner/author(s).

ACM ISBN 978-1-4503-6174-3/19/06.

<https://doi.org/10.1145/3328413.3329404>

skills, competence development or training are central concerns of involved stakeholders. These interactions generate a vast amount of data, about informal knowledge resources of varying granularity as well as user activities, including informal indicators for learning and competences. On the other hand, the prevalence of entity-centric Web data, facilitated through Open Data, Knowledge Graphs or Linked Data, as well as the more recent widespread adoption of embedded annotations through schema.org, Microdata and RDFa has led to the availability of vast amounts of semi-structured data which facilitates interpretation and reuse of Web content and data in learning scenarios. Initiatives such as LinkedUp or the more recent AFEL project² have already made available collections of learning-related data, covering both user activity as well as resource-centric information. The widespread analysis of both informal and formal learning activities and resources has the potential to fundamentally aid and transform the production, recommendation and consumption of learning services and content. Typical scenarios include the use of machine learning to automatically classify learning performance, competences or user knowledge by learning from the vast amounts of available data or to exploit resource-centric data and knowledge graphs to automatically generate learning resources or assessment items. However, interpreting learning activities and online interactions requires a highly interdisciplinary skillset, involving knowledge about learning theory, psychology and sociology as well as technical means to enable data analysis in large-scale heterogeneous data. Building on the success of several previous editions, LILE2019 aims at addressing such challenges by providing a forum for researchers and practitioners who make innovative use of Web data for educational purposes, spanning areas such as learning analytics, Web mining, data and Web science, psychology and the social sciences.

2 WORKSHOP CONTENT

LILE2019 workshop features an interactive mix of keynotes, presentations of accepted papers and posters and discussion. We organise two invited keynote talks given by influential researchers from the education and the computer science fields.

Prof. Dr. Carolyn Rosé: Mining Web Scale Interaction Data in Support of Collaborative Learning. This talk reports on over

a decade of research where theoretical foundations motivate computational models that produce real world impact in online spaces. Both the earliest philosophers of language and the most recent researchers in computational approaches to social media analysis have acknowledged the distinction between the what of language, namely its propositional content, and the how of language, or its form, style, or framing. What bridges between these realms are social processes that motivate the linguistic choices that result in specific realizations of propositional content situated within social interactions, designed to achieve social goals. These insights allow researchers to make sense of the connection between discussion processes and outcomes from those discussions. These findings motivate on the one hand design of computational approaches to real time monitoring of discussion processes and on the other hand the design of interventions that support interactions in online spaces with the goal of increasing desired outcomes, including learning, health, and wellbeing.

Prof. Dr. Kevyn Collins-Thompson: Connecting Searching with Learning. Although search engines are one of the most widely-used methods that people use to learn and explore, current search technology has been optimized (mostly) for generic relevance, not the background and learning needs of specific users. As a result, users often do not get effective access to the materials best suited for their learning needs. Moreover, little is known about the relationship between online search and interaction over time and actual learning outcomes. With collaborators, I have been exploring ways that search engines and rich online content and interaction signals can help us understand and support human learning goals, broadly defined. This talk will summarize progress in that direction from a range of research projects over the past decade, including exploration of richer learning-oriented representations of users and Web content (e.g. what happens if you label billions of Web pages with reading difficulty metadata?), new types of search ranking algorithms that try to directly optimize for learning goals, evaluating implicit online measures of learning, and user studies exploring the relationship between search quality, interaction patterns, and learning outcomes.

3 ORGANISERS

The organisers of the workshop have a broad range of relevant expertise in the topics of the workshop including learning analytics, information retrieval, multimedia retrieval, knowledge media, user modeling as well as extensive experience in organising and running successful workshops.

- **Ran Yu** is a researcher at GESIS - Leibniz Institute for the Social Sciences (Germany). Her research interests are in Information Retrieval, User Modeling, Knowledge Graphs and their application to Web data analytics problems specifically in learning scenarios. Her work has been published in major conferences and journals, she is member of numerous program committees.
- **Mathieu d'Aquin** is a professor at the National University of Ireland Galway, focusing on the Semantic Web, and especially on methods and tools to build intelligent applications exploiting online knowledge. More recently, he has been working on applications producing and consuming linked data, especially for education and research. Mathieu has published many papers in

major conferences and journals in the Semantic Web area and has been involved in the organization of events such as ESWC and the SSSW summer school.

- **Dragan Gasevic** is professor of learning analytics at Monash University in Australia. He served as the immediate past president (2015-2017) of the Society for Learning Analytics Research (SoLAR). Dragan was a founding program chair of the International Conference on Learning Analytics & Knowledge (LAK) in 2011 and 2012 and the Learning Analytics Summer Institute in 2013 and 2014, general chair of LAK'16, and a founding editor of the Journal of Learning Analytics (2012-2017). Dragan is a (co-)author of numerous research papers and books and a frequent keynote speaker.
- **Joachim Kimmerle** is a senior scientist in the Knowledge Construction Lab at the Leibniz-Institut für Wissensmedien (IWM) and an adjunct professor in the Department of Psychology at Eberhard Karls University Tübingen (Germany). In his research he investigates cognitive, motivational, and social aspects of collective knowledge construction and computer-supported collaborative learning. His work has been published in numerous conferences (e.g., International Conference of the Learning Sciences), leading journals (e.g., Journal of Computer Assisted Learning), and edited books.
- **Eelco Herder** is an assistant professor at Radboud University in Nijmegen, the Netherlands. His research focuses on the fine balance between the benefits of personalisation and perceived and actual risks associated with privacy matters. His main research interests include user modeling, personalisation, Web usage mining, data analysis and visualization and usability. Eelco is board member of User Modeling Inc. and recently served as General Chair for the UMAP 2017 conference in Bratislava, Slovakia and the Hypertext 2016 conference in Halifax, Canada.
- **Ralph Ewerth** is a professor at the Leibniz Universität Hannover (Germany) and head of the Visual Analytics Research Group at Leibniz Information Centre for Science and Technology (TIB), focusing on multimedia retrieval, content-based image and video analysis using deep learning, and search as learning. He has published more than fifty papers in related fields and served as TPC member for ACM ICMR etc. Currently, he is coordinator of the research project SALIENT (funded by Leibniz Association) that investigates multimodal aspects of search as learning.

4 ACKNOWLEDGEMENT

We would like to thank the organizers of the Web Science 2019 conference for agreeing to host our workshop and for their support. All papers submitted to LILE2019 received at least three reviews. For this, we would like to thank all reviewers for their time and contributions.