

Co-located with the 11th ACM Conference on Recommender Systems



Second International Workshop on Health Recommender Systems

Organizers:

David Elsweiler,
Santiago Hors-Fraile,
Bernd Ludwig,
Alan Said,
Hanna Schäfer,
Christoph Trattner,
Helma Torkamaan,
André Calero Valdez



August 31, 2017

Como, Italy



© 2017. Copyright for the individual papers remains with the authors. Copying permitted for private and academic purposes. This volume is published and copyrighted by its editors.

Preface

There are many reasons why people make poor decisions related to their health. They may be conditioned by busy lifestyles, abundant options, lack of knowledge, and overloading information, among other reasons. Yet these poor decisions are leading to epidemics, which represent some of the greatest challenges we face as a society today. Noncommunicable Diseases, which include cardiovascular diseases, cancer, chronic respiratory diseases and diabetes, account for around 60% of total deaths worldwide. These diseases share four behavioral risk factors: tobacco use, unhealthy diet, physical inactivity and harmful consumption of alcohol and can be prevented and sometimes even reversed with simple lifestyle changes. Eating healthier, exercising more appropriately, sleeping and relaxing more, as well as simply being more aware of one's state of health are all things that would lead to improved health. Yet knowing exactly what to change and how, implementing changes and maintaining changes over long time periods are all things people find challenging. Behavior change, health promotion, mental health promotion, health care support including patient diagnosis and treatments, and expert support are all areas for which we believe recommender systems can aid by offering specific, tailored suggestions. In recent years, recommender systems for health have become a popular topic within the Recommender Systems (RecSys) community and a selection of empirical contributions and demo systems have been published. Following the first Health Recommender Systems (HRS) workshop on 2016, the second HRS workshop focuses on enhancing HRS results by elaborating previous discussions and attracting interdisciplinary researchers to present and discuss their research. This volume contains the papers presented at the 2nd international workshop on health recommender system on August 31, 2017, held as part of the 11th ACM Conference on Recommender Systems in Como, Italy. Nine technical papers and one position paper were selected through a rigorous reviewing process by at least three PC members. These papers cover topics on health promotion, health care, as well as methods. The HRS chairs would like to thank RecSys 2017 organizing committee, especially the RecSys workshop chairs for their support. We would also like to thank the authors, presenters, and PC members, whose efforts made the workshop possible.

September, 2017

David Elsweiler
Santiago Hors-Fraile
Bernd Ludwig
Alan Said
Hanna Schäfer
Christoph Trattner
Helma Torkamaan
André Calero Valdez

Organizing Committee

| | |
|----------------------|--|
| David Elsweller | University of Regensburg, Germany |
| Santiago Hors-Fraile | University of Seville, Spain / Maastricht University Netherlands |
| Bernd Ludwig | University of Regensburg, Germany |
| Alan Said | University of Skövde, Sweden |
| Hanna Schäfer | TU München, Germany |
| Christoph Trattner | MODUL University Vienna, Austria |
| Helma Torkamaan | University of Duisburg-Essen, Germany |
| André Calero Valdez | RWTH Aachen University, Germany |

Program Committee

| | |
|---------------------|---|
| Markus Rokick | L3S Research Center |
| Martin Wiesner | Heilbronn University |
| Aysegül Dogangün | Universität Duisburg-Essen |
| Longqi Yang | Cornell University |
| Mehdi Elahi | Free University of Bozen-Bolzano |
| Martijn Willemsen | Eindhoven University of Technology |
| Francesco Ricci | Free University of Bozen-Bolzano |
| Kjetil Nørkvåg | Norwegian University of Science and Technology |
| Shlomo Berkovsky | CSIRO |
| Morgan Harvey | Northumbria University |
| Georg Groh | TU Muenchen, Faculty for Informatics |
| Ingmar Weber | Qatar Computing Research Institute |
| Michael Ekstrand | Dept. of Computer Science, Boise State University |
| Alexander Felfernig | Graz University of Technology |
| Toon De Pessemier | Ghent University |
| Tim Althoff | Computer Science Department, Stanford University |
| Robert West | Swiss Federal Institute of Technology in Lausanne |

Table of Contents

| | |
|--|----|
| Keynote Abstract: Medical Diagnosis and Treatment as a Recommendation Problem | 1 |
| <i>Xavier Amatriain</i> | |
| Towards Argumentation-based Recommendations for Personalised Patient Empowerment | 2 |
| <i>Juan Manuel Fernandez, Marco Mamei, Stefano Mariani, Felip Miralles, Alexander Steblin, Eloisa Vargiu and Franco Zambonelli</i> | |
| Recommendation in Persuasive eHealth Systems: an Effective Strategy to Spot Users' Losing Motivation to Exercise | 6 |
| <i>Paolo Pilloni, Luca Piras, Ludovico Boratto, Salvatore Carta, Gianni Fenu and Fabrizio Mulas</i> | |
| PHARA: a personal health augmented reality assistant to support decision-making at grocery stores | 10 |
| <i>Francisco Gutierrez, Bruno Cardoso and Katrien Verbert</i> | |
| The Impact of Prediction Uncertainty in Recommendations for Health-Related Behavior | 14 |
| <i>Katja Herrmann and Aysegül Dogangün</i> | |
| Running with Recommendation | 18 |
| <i>Jakim Berndsen, Aonghus Lawlor and Barry Smyth</i> | |
| Neighborhood-based Collaborative Filtering for Therapy Decision Support | 22 |
| <i>Felix Gräßer, Stefanie Beckert, Denise Küster, Susanne Abraham, Hagen Malberg, Jochen Schmitt and Sebastian Zaunseder</i> | |
| Investigating substitutability of food items in consumption data | 27 |
| <i>Sema Akkoyunlu, Cristina Manfredotti, Antoine Cornuéjols, Nicolas Darcel and Fabien Delaere</i> | |
| DIETOS: a recommender system for health profiling and diet management in chronic diseases | 32 |
| <i>Giuseppe Agapito, Mariadelina Simeoni, Barbara Calabrese, Pietro Hiram Guzzi, Giorgio Fuiano and Mario Cannataro</i> | |
| Hybrid collaboration recommendation from bibliometric data - The medical technology perspective | 36 |
| <i>Mark Bukowski, André Calero Valdez, Martina Ziefle, Thomas Schmitz-Rode and Robert Farkas</i> | |
| A Tool That Supports the Psychologically Based Design of Health-Related Interventions | 39 |
| <i>Anthony Jameson</i> | |

