CrowdMM 2015- Fourth International ACM Workshop on Crowdsourcing for Multimedia

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ABSTRACT

Crowdsourcing has the potential to address key challenges in multimedia research. Multimedia evaluation, annotation, retrieval and creation can be obtained at a low time and monetary cost from the contribution of large crowds and by leveraging human computation. In fact, the applicative frontiers of this potential are yet to be discovered. And yet, challenges already arise as to how to cautiously exploit it. The crowd, as a users (workers) community, is a complex and dynamic system highly sensitive to changes in the form and the parameterization of their activities. Issues concerning motivation, reliability, and engagement are being more and more often documented, and need to be addressed. Since 2012, the International ACM Workshop on Crowdsourcing for Multimedia *CrowdMM* has welcomed new insights on the effective deployment of crowdsourcing towards boosting Multimedia research. On its fourth year, CrowdMM15 focuses on contributions addressing the key challenges that still hinder widespread adoption of crowdsourcing paradigms in the multimedia research community: identification of optimal crowd members (e.g., user expertise, worker reliability), providing effective explanations (i.e., good task design), controlling noise and quality in the results, designing incentive structures that do not breed cheating, and tackling privacy issues in data collection.

Categories and Subject Descriptors

H.1.2 [**User/Machine Systems**]: [Human Factors, Human information processing]

General Terms

Crowdsourcing, Evaluation and Methodology, Human-Computer Interaction

Keywords

Crowdsourcing, Multimedia evaluation, Human Computation, Multimedia Annotation, Human Factors

1. INTRODUCTION

Crowdsourcing is expected to change the face of Multimedia in the coming years. Multimedia research is inextricably tied to humans: not only they create media; they are the recipient of the technologies we research on, and their appreciation for the experience that is delivered is the ultimate measure of the goodness of a multimedia system or application. For this reason, humans (users) need to be kept in the loop in multimedia research, for technology evaluation, identification of human factors and requirements, for the annotation of ground truth, and, of course, content creation and curation.

Crowdsourcing is a booster for the human-centric development of multimedia. Technological advances have created new opportunities to leverage human effort to address limitations of current automation or to enhance current systems capabilities. The further enhancement of human intelligence attainable when contributions from multiple individuals are combined ("wisdom of the crowds") has just begun to give indications of greater potential for the multimedia field. Applications range from the exploitation of unsolicited user contributions, such as using tags to aid understanding of the visual content of yet-unseen images, to utilizing crowdsourcing platforms and marketplaces like Amazon Mechanical Turk and CrowdFlower, which micro-outsource tasks such as semantic video annotation to a large population of workers. Further, crowdsourcing offers a time- and resource-efficient tool for collecting large volumes of input for system design and evaluation, making it possible to optimize multimedia systems more rapidly and to address human factors more effectively.

On the other hand, there many challenges still prevent crowdsourcing from being widely (and successfully) adopted in multimedia research. The crowd in charge of carrying out research-related tasks has a dynamic, volatile nature. As a result, if measures for workers engagement and motivation are not taken, and methods for reliability control are not implemented, the risk of obtaining noisy output is high.

The aim of the fourth International ACM Workshop on Crowdsourcing for Multimedia (CrowdMM15) is to introduce and explore novel approaches for exploiting crowdsourcing methodologies at their full potential in the full range of multimedia research topics of interest for ACM Multimedia 2015. The core topic of this workshop concentrates around one issue: *How to advance the use of crowdsourcing to the next level for the state-of-the-art in multimedia research?*
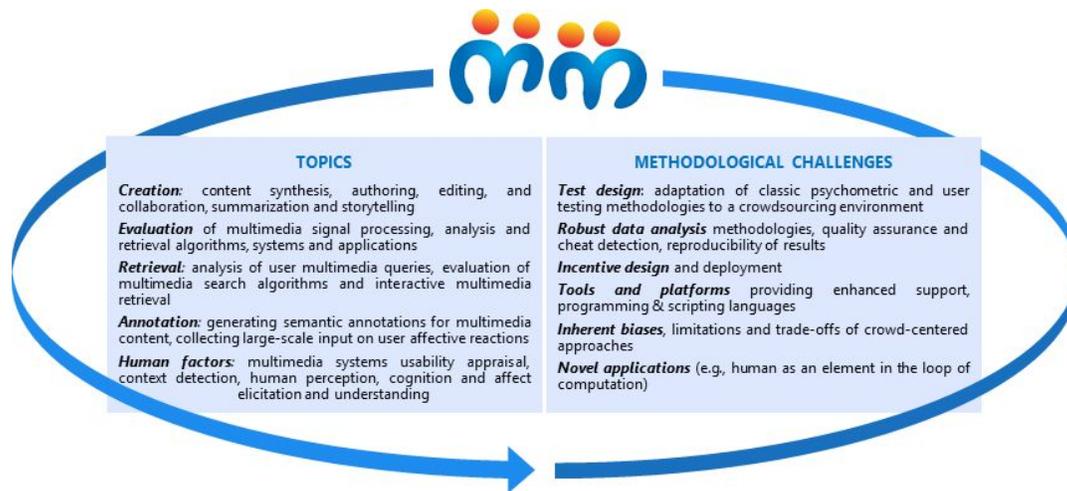
Figure 1: Topics and Methodological challenges addressed in CrowdMM15

2. OBJECTIVE

Crowdsourcing is a young technology that could prove invaluable for advancing the multimedia research and much work still has to be done to discover its full potential. However, being a problem solving tool rather than a goal in itself, crowdsourcing often requires a significant amount of exploratory work, in constant progress. For this reason, a workshop format, where fresh, new ideas and work in progress can be presented and discussed, is the most effective setup to push forward the use of Crowdsourcing for Multimedia Research, and solving the multitude of questions and challenges that are still open. Specifically, in its 2015 edition, CrowdMM focuses on addressing the methodological challenges listed in section 3 of this paper. Crowdsourcing cannot be considered as a mature technology for multimedia research if the results it produces are not reliable and repeatable. Hence, the goal of the workshop is to determine best practices for test and incentive schemes design, as well as robust data analysis and quality control techniques, along with eliciting new ideas for application areas in Multimedia where crowdsourcing may be a game-changer.

3. TOPICS

CrowdMM15 focuses on theoretical, methodological and applicative developments advancing the reliability and deployability of crowdsourcing for multimedia research. We explicitly called for submissions that (1) would employ crowdsourcing, wisdom of the crowd, games with a purpose, or human computation in different and new areas in multimedia topics (such as retrieval, evaluation and creation; see figure 1) and (2) would propose innovative solutions with respect to the methodological challenges that still justify skepticism around the widespread adoption of crowdsourcing, as indicated in figure 1.

4. PROGRAM

The workshop program includes oral presentations, invited keynote presentations, and a fishbowl discussion. Prof. Shih-Fu Chang, Richard Dicker Professor and senior Vice Dean of the School of Engineerign and Applied Sciences at Columbia University, joined CrowdMM15 as keynote speaker,

addressing insights into the use of Crowdsourcing for video event detection, sentiment analysis and user intent modelling. CrowdMM14 also featured a "CrowdKeynote", during which all CrowdMM15 authors, and community members at large, gave their view on the future and the Challenges that Crowdsourcing has still ahead.

CrowdMM received a total of 12 submissions. Of these, three were accepted as oral presentations (25%) and another four as poster presentations. All papers received at least three double blind reviews, and 3.5 reviews on average. The organizers are grateful to the Program Committee members[1] and additional reviewers for their efforts in reviewing and for their insightful comments.

5. ORGANIZERS

- Judith Redi, Dept. Intelligent Systems, Delft University of Technology, The Netherlands [2]

- Stevan Rudinac, Intelligent Systems Lab Amsterdam, University of Amsterdam, The Netherlands [3]

6. STEERING COMMITTEE

The former workshop chairs are committed to CrowdMM and since 2014 have formed a steering committee to oversee and counsel on the integrity of the overall vision and goals of the workshop. The CrowdMM15 steering committee was:

- Kuan-Ta Chen, Academia Sinica, Taiwan.

- Martha Larson, Delft University of Technology, The Netherlands

- Tobias Hoßfeld, University of Wuerzburg, Germany

- Wei-Ta Chu, National Chung Cheng University, Taiwan

- Mathias Lux, Klagenfurt University, Austria

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[1] http://www.crowdmm.org/committees/
[2] http://www.mmi.tudelft.nl/~judith/
[3] https://staff.fnwi.uva.nl/s.rudinac/index.html