

Disco: Workshop on Human and Machine Learning in Games

Markus Krause¹, François Bry², Mihai Georgescu³

¹ Leibniz University Hannover, Germany

² Ludwig-Maximilian University Munich, Germany

³ L3S Research Center, Leibniz University Hannover, Germany
markus@hci.uni-hannover.de, bry@lmu.de, georgescu@L3S.de

Abstract

Exploiting the playfulness of games has been extremely successful in bringing humans “in the loop” to solve complex computational tasks that would otherwise be hardly tractable. Although many proposals and systems after this paradigm have been developed, deployed, and tested, the relationship between play and human computation still deserves more investigations. Most work in human computation focuses on the ability for the machine to exploit, or learn from, humans. The workshop has a slightly different focus: the exploration of extending “I learn” (“disco” in Latin) to machines and humans alike. Games hold tremendous potential for discovery related to human and machine computation because of the intrinsic relation between play and learning. Extending and building upon the focus of past workshops on games and human computation Disco aims at exploring the intersection of entertainment, learning and human computation.

Description

The penetration of the Internet across the globe has fostered large online communities and has enabled social computing applications to harness humans’ knowledge and skills. As a consequence, the way we think about computation, artificial intelligence, and research in general is radically changing. The types of problems that can be explored with algorithmus with humans in the loop, so called human computation methods, are extraordinarily diverse, ranging from molecular biology, neuroscience, economics, social science, robotics, computer vision, machine learning and natural language processing. Throughout all of these diverse fields, entertainment and learning are emerging as common threads.

Digital games *are* interaction machines and always contain a learning component. Whether you are stacking blocks, exploring dungeons, or building cities, games provide a variety of human machine interactions that range from simple puzzles to complex problem spaces. The challenges

that emerge through these mechanics are precisely what foster human learning during the course of a game.

This workshop aims at exploring the relationships between entertainment, learning, and human computation. We have several goals for our workshop that investigate the relationship between human computation and digital entertainment. First, we are interested in the powerful incentive games provide for encouraging learning and human computation. Second, we would like to understand how learning can be seamlessly integrated into human computation tasks to improve the experience for users and the results of the computation. Third, we would like to explore how this learning relates to entertainment and games. Finally, to close the loop, we would like investigate how human computation can improve the content, design and playability of games.

Entertainment, rewards and gamification are vectors of learners’ motivation. In games, learning is a prerequisite of success and satisfaction. Learning can be exploited for designing new kinds of human computation systems. Finally, peer learning can be seen as a form of human computation for large scale learning systems. The three points of focus, games, learning and human computation have much in common e.g.: research in participation, motivation, and reward.

The Disco workshop is in the continuation of two former workshops:

- 1st International Workshop on Systems with Homo Ludens in the Loop GCI’2012, at the International Conference on Entertainment Computing (ICEC), 2012
- 1st International Workshop on Human Computation in Digital Entertainment HCompAI’2012, at the Conference on Artificial Intelligence in Interactive Digital Entertainment (AIIDE), 2012

The workshops have been focused at serious games and games with a purpose and have been held in 2012 at AIIDE and ICEC.