5th International Workshop "Gam-R – Gamification Reloaded"

In Conjunction with the Mensch und Computer 2022 Conference in Darmstadt, Germany

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1 TOPIC AND CONTENT OF THE WORKSHOP

The "Gam-R – Gamification Reloaded" series hosts a regular international workshop on gamification and related topics. Gamification as a scientific concept for using game-like elements in a non-game context [3] is here to stay [7–10]. The results of the past four workshops were summarized to identify current and future gamification trends and form the basis for the new focus of the workshop [6]. Among other areas, gamification can, from a scientific perspective, help to improve the motivation for education, engage with health-related aspects, support sustainable consumption, and improve customer loyalty [2, 6]. Recently, further fields of application have been added, which, among others, are now coming into focus and will also be discussed in this workshop, e.g., artificial intelligence (AI) and machine learning (ML) [5, 13] augmented reality (AR) [4], virtual reality (VR) [12], mixed reality (MR) [11], or Internet of Things (IoT) [1].

The workshop invites scholars and practitioners to present and debate novel research ideas. Furthermore, applications or research regarding gamification that meet a high scientific quality is appreciated. Experts can then discuss the accepted papers at the workshop to get input from the community for future initiatives, for example. Therefore, we accept submissions on the following topics, although the list is not exhaustive:

- Artificial Intelligence (AI) and Machine Learning (ML)
- Open Science and Citizen Science
- Augmented (AR), Virtual (VR), and Mixed Reality (MR)
- Internet of Things (IoT)
- Analog and Hybrid Gamification
- Gamification for Individuals with Disabilities
- Ethical Aspects of Gamification
- Sustainability
- COVID-19
- NFT (Non-Fungible Token)

We identify this list as emerging fields of application for gamification. Of course, other aspects like adaptive and personalized gamification, definitions and theories concerning gamification, serious games and game-based learning, and many other topics are welcome. Therefore we also encourage submissions about already identified research gaps like the following:

- Focusing the research area, in particular definitions and theories for gamification and beyond.
- Analyzing game design elements, particularly the individual-, joint- and user-related effects.
- How to replace PBL (points, badges, and leaderboards) with other game design elements.
- Identifying long-term effects in empirical studies and how to conduct experiments.

The website for the workshop can be found at https://www.gamification-reloaded.com/.

2 OBJECTIVES, PLANNED ACTIVITIES, AND TARGET AUDIENCE OF THE WORKSHOP

This scientific workshop intends to accomplish the following two objectives:

- Presentation and debate of fresh concepts, solutions, and research studies on gamification.
- To meet and network with gamification researchers for future collaboration.

The workshop consists of two parts. The first part includes the presentation and in-depth discussion of selected papers, which will also be included in the workshop proceedings of the Mensch und Computer 2022 conference. The organizing team will select the papers according to a preceding peer review, whereby at least three reviewers will evaluate each submission. In previous years, between two and four submissions were selected for presentation, which is also the intention for 2022. This first part will last between one and a half and two hours and thus last the morning.

In the second part of the workshop, a hands-on workshop on AI-driven gamification will occur. Since 2016, the EMPAMOS research project at the Nuremberg Institute of Technology has been using machine learning methods to analyze the use of game design elements in games [13]. From over 50,000 empirical data of more than 8,000 board games, an AI assistant was developed to support the development of tailored gamification concepts that address specific motivational design misfits. In this second part of the workshop, participants will be introduced to the web-based AI assistant, and its functionality will be explained using concrete use cases. Furthermore, the participants can test and try out the AI assistant

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themselves during the workshop. Afterward, the opportunities and risks associated with using AI-based methods for gamification will be discussed with the participants. Although we have an open-end session, we expect this second part to last two hours.

We are fully aware of the COVID-19 pandemic. If necessary, we will conduct the workshop entirely online.

Three submissions have been accepted for presentation at the workshop. The accepted submissions are briefly presented here:

- *Athanasios Mazarakis* (ZBW – Leibniz Information Centre for Economics) and *Paula Bräuer* (Kiel University) have authored a submission called *"Gamification und die Wahrnehmung von Punkten – Eine Umfragestudie"*. The authors researched the perception of points, arguing that research is missing about which specific point values are useful and when point values might be too few or too many. In particular, the finding that the perception of points can change through a given context strongly forms a basis for further research possibilities.
- *Saksham Consul*, *Jugoslav Stojcheski*, and *Falk Lieder* (all from Max Planck Institute for Intelligent Systems) have submitted a paper titled *"Leveraging AI for Effective To-Do List Gamification"*. They present a scalable approximate method for to-do list gamification to be useable in the real world. The central idea of the method is to decompose the problem hierarchically and compute the optimal plan at each level of the goal hierarchy.
- *Alexander Schneider* (Nuremberg Institute of Technology) provides an interesting article about *"Evidenzbasierte Definition von Spiel-Design-Elementen durch automatisierte Regelextraktion aus Spielanleitungen"*. The submission shows a theoretical framework for using Inductive Logic Programming, including Natural Language Processing, to define game design elements. Based on pattern theory, the approach offers the possibility of automatically creating suggestions for definitions of game design elements.

3 ORGANIZING TEAM

The workshop is mainly organized by two researchers:

Athanasios Mazarakis is a former computer science postdoc at Kiel University, Germany, now working as a project manager and senior researcher at ZBW – Leibniz Information Centre for Economics on gamification and incentives in the interdisciplinary field between computer science, economics, and psychology for more than a decade. Numerous publications on gamification and successful workshop organizations (also at the Mensch und Computer conference series) complete his competence profile.

Thomas Voit has been teaching and researching as a professor on gamification as a business informatics specialist at the Nuremberg University of Applied Sciences since 2014. Before joining the university, he was employed in the automotive industry, where he initiated and led a gamification project to motivate managers to adopt new leadership roles. Since the end of 2016, he has been leading the gamification research project EMPAMOS in cooperation with the German Games Archive Nuremberg.

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