

Game Metrics and Biometrics: The Future of Player Experience Research

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ABSTRACT

There is a call in industry and research for objective evaluation of player experience in games. With recent technological advancements, it is possible to automatically log numerical information on in-game player behavior and put this into temporal, spatial, and psychophysiological context. The latter is done using biometric evaluation techniques, like electromyography (EMG), electroencephalography (EEG), and eye tracking. Therefore, it is necessary to discuss experimental results in academia and best practices in industry. This panel brings together experts from both worlds sharing their knowledge using conventional and experimental, qualitative and quantitative methods of player experience in games.

Categories and Subject Descriptors

K.8.0 [General]: Games—*Personal Computing*; D.2.8 [Software Engineering]: Metrics—*complexity measures, performance measures*; H.5.1 [Multimedia Information Systems]: Evaluation/methodology—*Information Interfaces And Presentation*

General Terms

Measurement, Performance, Design, Experimentation, Human Factors, Standardization

Keywords

games, metrics, biometrics, player, user experience, funology

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1. INTRODUCTION

In the past, user-centered game testing [16, 22] has largely borrowed methods from the human-computer interaction [17, 3] and the user experience community [6, 18, 19], which uses principally qualitative measures, like think-aloud protocol, interviews and surveys or a combination of them [8]. While these methods provide great insights into individual user experiences and allow developers to get an estimation of how their game is perceived by their players, they lack the empirical power of quantification.

Previous panels and workshops explored: differences between user research methods for games and productivity software [9], untapped video game genres [7], user experience measurement in games [1] and evaluation of player experience in games [2]. This panel will take this discussion one step further by looking at the status quo of game metrics evaluation and the future of player evaluation. It will consider how new types of data, including psychophysiological instrumentation (e.g. electroencephalography (EEG), electromyography (EMG), and eye tracking) or problem reports can be incorporated into the existing game evaluation process.

Recently, there has been a change in many game companies toward using quantitative data in game evaluation [21]. This move comes together with research efforts into biometric evaluation of play [4, 5, 10, 11, 12, 13, 14, 15]. There is, however, a need to discuss the benefits and limitations of these evaluative methods and to compare them to classic qualitative evaluation methods.

Tychsen [21, 20] provided a distinction of game metrics in (1) navigation metrics, (2) interaction metrics, (3) narrative metrics, and (4) interface metrics. We will extend this definition to include biometric player data and seek to explore and establish a more precise taxonomy, usable application methods, and research and industry practices. The panel has the goal to provide a platform for industry and academia to discuss the current challenges in game metrics and biometric research and practice. This can only be done by comparing benefits and limitations of qualitative and quantitative methods.

2. PRESENTERS

2.1 Lennart Nacke

Lennart Nacke has a computer engineer's degree (Dipl.-Ing.) in Computational Visualistics from Otto-von-Guericke University, and is currently a Ph.D. candidate in Digital Game Development at the Blekinge Institute of Technology. His research interests are biometric/psychophysiological evaluation of game experience, playability metrics and innovative interaction design for digital games. He moderates the panel.

2.2 Mike Ambinder

Dr. Mike Ambinder has a Ph.D. in Experimental Psychology (with a focus on visual cognition) from the University of Illinois and a B.A. in Computer Science and Psychology from Yale University. At Valve, he works on the application of knowledge and methodologies from psychology to game design.

2.3 Alessandro Canossa

Alessandro Canossa has a M.A. in Science of Communication, from the University of Turin. During the late nineties he was Art Director in advertisement and found his vocation/obsession in game development (LEGO, Tabula Rasa Games). Since 2006 he has worked at IO Interactive on his Ph.D.

2.4 Regan Mandryk

Dr. Regan Mandryk is an Assistant Professor in Computer Science at the University of Saskatchewan. Among her degrees are a M.Sc. in Kinesiology (2000), and a Ph.D. in Computing Science, both from Simon Fraser University (2005). Her current research interests are on sensing and modeling user state, designing interaction techniques and games for emerging devices and to encourage healthy living.

2.5 Tadeusz Stach

Tadeusz Stach is a Ph.D. student in computer science at Queen's University. His research focus is on exercise video games. In particular, he is interested in how physiological information (such as heart rate) can be used to improve a player's enjoyment and exercise effectiveness when playing games designed for physical exercise.

3. POINTS OF INTERACTIVITY

Each panelist will introduce themselves in a fast-paced, vibrant, 30-seconds flash entrance. The panel moderator will subsequently put controversial statements about game metrics up for discussion by the panelists. A main point of discussion will be the integration of qualitative and quantitative game evaluation methods. This part of the panel is a moderated, interactive discussion between experts from academia and industry about current issues in metrical game evaluation.

The discussion will be guided to provoke thoughts about best practices in research and industry for using game metrics. The last 10 minutes of the panel are reserved for questions from the audience.

4. TAKE-HOME MESSAGE

Participants will have a clear understanding of the current state of the art in biometrics and game metrics methods as well as suggestion on how to incorporate these into existing processes for evaluating player experience.

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