

Analysing player decision-making of a moral dilemma through a computer vision analysis of Youtube gameplay videos

*Stephanie de Smale, Bram van den Brink, Remco C. Veltkamp, Johan T. Jeuring
Utrecht University*

We present our research-in-progress of analysing player decision-making through a quantitative automatic content analysis of gameplay videos of a war game scraped from Youtube. As Radde-Antweiler and Zeiler (2015) illustrate, a context analysis of gameplay content on video platforms should focus on three things: (1) the game; (2) the player's performance; (3) the comments on a video. For this research, we focused on the game itself. Although quantitative textual analysis (such as analysing youtube comments) is a more institutionalised practice, quantitative image analysis is not done frequently. First, using a Youtube scraper (Digital Methods Initiative 2016) that uses the Youtube API, we obtained a sample of 500 gameplay videos of a particular moral dilemma in the game *This War of Mine* (11 bit studios). Second, we use automatic image analysis to recognize objects (such as chosen characters or resources) and scenes in the frames of these videos to visualise player decision paths. The recognition is based on SIFT descriptors in the OpenCV computer vision software library. Thirdly, we are visualizing these decisions in behavioural trees, mapping the different routes taken by players.

Serious war games, such as this one, are seen as potentially valuable for their ability to promote cognitive and affective empathy (Darvasi 2016). Therefore, understanding what gameplay content is shared on video platforms and analysing what a player does in these games is potentially valuable for peace education and conflict resolution. In this research, we set out to analyse a moral dilemma of a sexually violent scenario, where the player may choose to intervene or not to intervene. Analysing this scenario we are particularly interested in the choices leading up to this decision. Choices such as which playable character or which resource the player chooses creates different player paths, resulting in different play patterns.

From a humanities perspective, this analysis offers empirical research of non-researcher centric analysis of gameplay data. Within critical game analysis, most gameplay centric research tends to be a "close-reading" of gameplay, where the researcher adopts an auto-ethnographic perspective (e.g. Aarseth 2003; Lankoski & Björk 2015). This limits the study of games whose narratives highly depend on player decisions for developing its storyline. As others noted, playing research is tightly connected to the way in which we understand games (Karppi & Sotamaa 2012). Our aim in this study is not to completely remove the researcher from studying the game. Rather, insights from playing research were used to distill key decision moments of this particular moral dilemma.

Instead of a close reading, this research uses a digital humanities approach, also termed 'distant reading' (Moretti 2013). Through statistical analysis, distant reading 'aims to generate an abstract view from observing textual content to visualizing global features of a single or of multiple text(s)' (Jänicke et al. 2015). We build on Šisler (2016) who uses it to map game-rule systems. Our approach differs in two ways: firstly, by focusing gameplay instead of the formal system of the game we are able to analyse the game in action. Second, where distant reading statistically analyses texts, we analyse images. The output however, is similar, namely, we set out to develop scenario trees by conducting a micro-analysis of one gameplay event to classify how a player navigates this morally complex situation.

References

Aarseth, Espen. 2003. "Playing Research: Methodological Approaches to Game Analysis." In *Proceedings of the Digital Arts and Culture Conference*, 28–29.

Darvasi, Paul. 2016. "Empathy, Perspective and Complicity: How Digital Games Can Support Peace Education and Conflict Resolution." *United Nations Educational, Scientific and Cultural Organization | Mahatma Gandhi Institute of Education for Peace and Sustainable Development*.

Digital Methods Initiative. 2014. *Youtube Scraper*. Software.

Jänicke, Stefan, Greta Franzini, Muhammad Faisal Cheema, and Gerik Scheuermann. 2015. "On Close and Distant Reading in Digital Humanities: A Survey and Future Challenges." *Proc. of EuroVis—STARs*, 83–103.

Karppi, Tero, and Olli Sotamaa. "Rethinking playing research: DJ HERO and methodological observations in the mix." *Simulation & Gaming* 43.3 (2012): 413-429.

Lankoski, Patri, and Staffan Björk. *Game research methods: An overview*. Lulu. com, 2015.

Moretti, Franco. 2013. *Distant Reading*. Verso.

Šisler, Vít. "Procedural religion: Methodological reflections on studying religion in video games." *new media & society* (2016): 1461444816649923.

Southey, Finnegan, R. C. Holte, Gang Xiao, Mark Trommelen, and John Buchanan. 2005. "Machine Learning for Semi-Automated Gameplay Analysis." In *Proceedings of the 2005 Game Developers Conference (GDC)*.

Radde-Antweiler, Kerstin, M. Waltemathe, and X. Zeiler. "Video gaming, Let's Plays, and religion: the relevance of researching Gameenvironments." (2014): 1-36.

11 Bit Studios. 2014. *This War of Mine*. Software.