Ad-Robot Interaction: introducing a new media interaction genre

Vassilis Javed Khan

NHTV Breda University of Applied Sciences, Academy for Digital Entertainment

Hopmansstraat 1, 4817JT Breda, The Netherlands

khan.j@nhtv.nl

Joost van Hoevelaken

NHTV Breda University of Applied Sciences, Academy for Digital Entertainment

Hopmansstraat 1, 4817JT Breda, The Netherlands

111312@nhtv.nl

Abstract

In this paper we propose an extension of media content beyond the screen to enhance the user's experience: media-robot interaction. We present an ad specifically developed with that extension in mind. We explore the opportunities and challenges of this novel extension.

Author Keywords

Media robot interaction; interactive advertisement; user experience.

ACM Classification Keywords

I.2.9 Robotics; Commercial robots and applications.

Introduction

The extension of the viewer's experience of content on the TV has been researched and has proven to have market success in the near past. One of the first well known examples, of such an extension, that was brought to the market with quite some success, is that of Philips' AmbiLight TV. The device itself was extended with several LED lights in its edges. Moreover, the TV was also able to recognize certain color patterns in the played content and based on that content light up the LED lights to create an extension to the experience in the ambiance of the room. That idea has been recently extended by Microsoft Research with the IllumiRoom concept [3]. In IllumiRoom, one of the extensions to

Figure 1: Chosen storyboard (second of the proposed five) depicting a child seeing a nightmare that involves the snake figure from the LEGO Mindstorms platform

the game or TV content is done not with LED lights but with projecting content around the TV screen.

Thinking along this line of extending media content around the output device we envision extending the content with synchronizing movement and actions of robots. We envision a TV ad in which the characters involved can interact with physical robots in the proximity of the TV. We hypothesize that this form of interaction will lead to an enriching user experience when compared to its absence. For example, one might imagine a simple interaction in which the characters in the TV ad might wave to the side of the robot and the robot might wave back, to more complex interactions such as the virtual character in TV might moving to the edge of the TV where at that point the physical robot might continue the movement.

In the remainder of the paper we present the first ad that implements the vision of having media content interact with robots, the process we took to develop it and the faced challenges, the research questions that arise and finally the opportunities we envision.

Case study: an ad designed with robot interaction in mind

Regarding the process for developing the ad, we reviewed robotic platforms that would be easy to program and that the robot's appearance would effortlessly link to an ad that would be expected to be seen in a TV screen. For those reasons we decided to choose for LEGO's Mindstorms™ platform. This platform has several robotic figures that can be constructed, it is already a product of a well-known brand, there are several ads of this brand and finally it is highly feasible

to both remote control the robot with an app and to program its actions.

After having decided on the robotic platform, the next challenge was to think of the content and the interaction of the ad. The first question we faced was whether the ad itself would be about LEGO Mindstorms or for some other product. For that reason, five storyboards were developed to have a broad choice of possible ads. One storyboard was made for the LEGO Mindstorms itself and the rest for other, existing brands. The storyboards were then pitched to the production crew, comprising of five students. The crew, gave remarks and rated each storyboard in terms of its feasibility and expectations of perceived interactivity. The ultimate goal was to pick one storyboard that clearly conveys the interaction between the robot and the TV content. Eventually, the LEGO Mindstorms storyboard was chosen (Figure 1). In that storyboard, a child is seen sleeping in his bed and he is abruptly woken up by the snake-character of LEGO Mindstorms.

The next step was to refine the storyboard in conjunction with the planned robot interaction. The interactions were planned so that they: 1) overlap with at least 1/3 of the time of the commercial which is roughly 30 seconds and 2) could be in-sync with the displayed content.

Challenges and opportunities

The television landscape is transforming. Advertisers see a loss of effectiveness of traditional advertising communication on television, so they need to make creative use of television advertising to increase brand awareness, advertising recall and in general making more effective advertising campaigns [1].

Figure 2: Two frames of the TV ad that initiate robot interaction. In the first one (left) the snake character moves in the screen and so does the real snake robot and in the second (right) the snake performs an attack move in screen and in reality

Interactive advertising might be the solution for this problem, since it has the potential to increase the efficiency and quality of consumer's decisions, increase customers' involvement and satisfaction, and promote trust through reciprocity in information exchange, technical assistance, and reduction of information asymmetry [4]. Robots are likely to develop new types of interaction with people and people's relationships with robots will shift from "funny toy" to "long-term companion" [2]. This is why it is relevant to research if robots can actually enrich advertisements in order to create more effective television advertisements.

With the aforementioned interactive ad (Figure 2) we want to investigate whether or not viewers will experience television advertisements that interact with robots as more interactive compared to a regular television advertisements.

The challenges for such a research agenda are several. How does one author such interactions? How does the screen or device is aware of the presence of robots in its vicinity? What are the technical components to actually implement such an interaction on a broader scale? More importantly, what sort of interactions will be of added value? These are some of the questions that such a concept raises and that need to be explored in future research endeavors.

Conclusion

In this paper we presented our vision of media content interacting with robots for creating enriched user experiences. A specific instant of that vision is a TV ad that we developed to interact with a robot character from the LEGO Mindstorms kit. In the near future, we will investigate if such an ad will actually be perceived as more interactive when compared to a regular TV ad. We believe that such an interaction can open up a novel set of user experiences for advertisement, entertainment and learning.

Acknowledgements

Moreover, we would like to extend our gratitude to Bruce Hancock, manager of education and Marnix van Gisbergen, manager or research at the Academy for Digital Entertainment at our university for their continuous support on this research endeavor.

References

1. Arrazola, M., de Hevia, J., Reinares, P. & Lara, R. (2013). Do new forms of television advertising occasion better recall than traditional advertising spots? International Journal of Advertising, 32(2), 281-300.

2. Dautenhahn, Kerstin (2014): Human-Robot Interaction. In: Soegaard, Mads and Dam, Rikke Friis (eds.). "The Encyclopedia of Human-Computer Interaction, 2nd Ed.". Aarhus, Denmark: The Interaction Design Foundation. Available online at https://www.interaction-design.org/encyclopedia/human-robot_interaction.html

3. Jones, B. R., Benko, H., Ofek, E., & Wilson, A. D. (2013, April). IllumiRoom: peripheral projected illusions for interactive experiences. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 869-878). ACM.

4. Pavlou, P. A., & Stewart, D. W. (2000). Measuring the effects and effectiveness of interactive advertising: A research agenda. *Journal of Interactive Advertising*, *1*(1), 61-77. Interactive ads