Improving the visibility of in-game advertisements

Le Zhang

Fakultät für Informatik
Diplomstudium
Computergraphik

Motivation
Video games, a new attractive channel for advertising

Relevance for marketing:
• In-game advertising market has a high growth rate
• Computer games reach particularly young people

Different perception of advertisements:
• The interactive nature of computer games interferes with players' memory and attention

Search "in reverse"

Idea: Apply theory of Guided Blindness

Breaking through Inattentional Blindness

Different perception of advertisements:
• The interactive nature of computer games interferes with players' memory and attention

Guided Search

Experimental Validation

Hypothesis:
• If we design frequently searched game items such that they share some perceptual features with advertisements, Guided Search predicts that advertisements become false positive suggestions for the deployment of attention during visual search.

Further Assumptions:
• Only attended objects may enter memory. Hence, we can validate our hypothesis with a memory test (dependent variable)
• Effectiveness of advertisements correlates with ability to remember them

Test: Inattentional blindness in computer games

Video games impose an intensive task to the players. Hence, the full perceptual and cognitive capacity of the player is focused on task relevant information. But task irrelevant information is ignored.

In-game advertisements are very irrelevant objects.

in-game advertisements remain often unattended

Goal
Breaking through Inattentional Blindness

Idea: Apply theory of Guided Search "in reverse"
• There is often a visual search task in a game (e.g. looking for health items)
• During visual search, we can attract player's eye-movements to advertisements by changing pre-attentive vision

Therefore, we link visual search targets and advertisements by using similar abstract features for advertisements and search targets

Stimuli
We implemented a representative action game:
• 3D shooter
• 2D shooter
• 3D background
• 6 advertisement billboards
• We used brands with similar popularity in Europe according to the Brandz Ranking Report 2018
• McDonalds = Target Advertisement
• Shield = Health item (frequently spawns on random positions)

User Study

The game was played in 3 conditions:
• TEST: Health items shares features with the target advertisement (McDonalds)
• CONTROL 1: health item is not similar to advertisements
• CONTROL 2: Same health item (as in TEST), but target advertisement absent

Procedure
The following protocol was used for the experiment:
1. Playing game (3 minutes)
2. Memory Test (6-8 minutes)
3. Distraction. We used a dummy questionnaire to distract participants from their game experience and clear their short-term memory (6 minutes)

Participants
36 volunteers recruited from TU campus:
Th 7 female, age = 24.3 ± 4.0
Every participant could play the game in only one condition, random assignment to one condition. 12 participants per condition

Results of the Memory Test

Mean

Statistical Analysis

We evaluated the statistical significance

Comparing TEST with control conditions (the target advertisement) using non-parametric tests (Wilcoxon Rank sum):

H1: Target > other adv. (in TEST), p < 0.007
H1: TEST > CONTROL 1, p = 0.003
H1: TEST > CONTROL 2, p < 0.001

Conclusion

Design of game items has a significant impact on users' attention:

• Advertisements which are similar to important search targets are recognized better
• Advertisements which are dissimilar are recognized worse

This may have the following consequences:
• Account for Guided Search when determining advertising prices
• Attention guidance for other purposes than advertising

Future Work:
• Full 3D game (more popular)
• Multivariable analysis (several features, more subtle similarities)

Kontakt: wienerzhangle@gmail.com

Betreuer: Associate Prof. Dipl.-Ing. Dipl.-Ing. Dr.techn. Michael Wimmer
Betreuender Assistent: Dipl.-Ing. Matthias Bernhard

Technische Universität Wien
Institut für Computergrafik und Algorithmen
Arbeitsbereich: Computergrafik