

Figure 1: The illustrated game idea: A virtual monster can be dragged onto ads to eat them and make them disappear. As a reward, the player receives experience points and ad-free time. Experience points lead to level-ups and unlocking virtual items, which can be equipped

Eating Ads With a Monster: Introducing a Gamified Ad Blocker

Maximilian Altmeyer, Pascal Lessel, Kathrin Dernbecher,
Vladislav Hnatovski, Marc Schubhan, Antonio Krüger
German Research Center for Artificial Intelligence (DFKI)
Saarland Informatics Campus, Germany
firstName.lastName@dfki.de

ABSTRACT

Often, online ads are annoying. Ad blockers are a way to prevent ads from appearing on a web page. As a result, web service providers lose more than 35 billion dollars per year and freely available content on the web is at risk. Taking both interests of web service providers and users into account, we present a gamified ad blocker that allows users to drag a virtual monster over ads to eat them and make them disappear. For each deactivated ad, users receive ad-free time that they can take whenever they want. We report findings from a pre-study, establishing requirements for the implementation of the ad blocker as well as the results of a usability test of our prototype. As a next step, we will release the extension in the Chrome Web Store for upcoming in-the-wild studies.

KEYWORDS

Gamification; Ad Blocker; Usability; User Experience

INTRODUCTION AND RELATED WORK

Online ads are perceived as more prevalent and disruptive today, leading to a bad user experience on the web [3]. As a consequence, users react with site abandonment or make use of so-called ad blockers, preventing websites from showing ads [3]. However, this leads to dramatic revenue losses of over 35 billion dollars per year and poses a serious threat to freely available content on

Permission to make digital or hard copies of part or all of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for third-party components of this work must be honored. For all other uses, contact the owner/author(s).

CHI'19 Extended Abstracts, May 4–9, 2019, Glasgow, Scotland UK

© 2019 Copyright held by the owner/author(s).

ACM ISBN 978-1-4503-5971-9/19/05.

<https://doi.org/10.1145/3290607.3313092>



Figure 2: News article of the dummy news website used in the pre-study

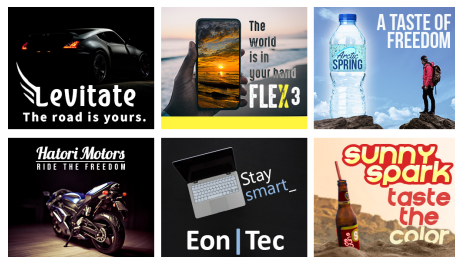


Figure 3: Ads that were shown on the dummy news website for fictitious products and brands

the web. In previous work [2], we investigated deactivating ads playfully in a controlled lab study and found that this positively affects both user enjoyment and the effectiveness of ads. Based on these previous results, we propose a gamified ad blocker browser extension in this paper to be used for upcoming in-the wild studies. This ad blocker allows users to playfully deactivate ads to collect ad-free time which the user can use whenever he or she likes. Thus, such an ad blocker could be a sensible compromise, where site operators still earn money from ads and users do not get fed up with seeing them. The idea of combining games or elements known from games with advertising is not entirely new. Often, so-called “In-Game Advertising” is investigated, which means that brands or products are being integrated into digital games [8]. Nelson [7], for instance, found that most players do not consider the act of brand placement within games as deceptive. In addition, players recalled 25% to 30% of brands immediately after playing the game. Similarly, Yang et al. [9] investigated the effectiveness of brand names integrated in two sports video games. They found that such in-game ads influence brand recognition positively. “Gamified” advertising for sports products was explored by Bittner and Shipper [5]. However, the authors used the term “gamified products” for ads in which the advertising slogans suggested playful features of the product, i.e. the ads did not provide any interactivity. Nevertheless, the authors found that gamified products lead to an increased enjoyment of the advertised product. Gameful approaches have also been used for marketing campaigns. A prominent example is the alternate reality game “I Love Bees” with more than one million players participating. It was launched in 2004 to promote the release of the Xbox game “Halo 2”. In an official trailer of the game, a website was advertised that seemed to be infected by a computer virus. A closer analysis of the website revealed that players all over the world had to collaborate, combining virtual gameplay with events in the real world, to help an artificial intelligence that was stranded on Earth find its way back to the Halo world. To sum up, related work shows positive effects of combining games and advertising on the effectiveness of ads, as was shown by positive effects on brand or product memory [7, 9]. It also shows that such a combination leads to a greater enjoyment of advertised products [5] and has the power to engage many users as well as spark interest in the advertised product or service. These results motivate our approach of playfully deactivating ads with a gamified ad blocker as it might be beneficial for advertisers (due to the positive effect of gameful approaches on the ad effectiveness) and users (due to the greater enjoyment of ads). As far as we know, we provide the first consideration and implementation of such a gamified ad blocker.

CONCEPT AND IMPLEMENTATION

Based on our previous research [2], we decided to allow users to playfully deactivate ads by dragging a virtual monster over ads to make the monster eat the ad. This idea of playfully deactivating ads was shown to have positive impacts on brand recognition, user enjoyment and was the only concept which was preferred over using an ad blocker in our lab study. To establish requirements for the

The free-text answers were analyzed by conducting an inductive content analysis with two coders. Results were discussed and deviations solved to establish the following requirements for our system:

R1: The system should offer the possibility to block ads completely for a certain time, when users would like to concentrate on a task (mentioned by 8 participants).

R2: Disruptive ads should be blocked automatically (mentioned by 6 participants).

R3: The game should offer variety to be interesting for a longer time (mentioned by 5 participants).

R4: Eating ads should offer added value for the user (mentioned by 4 participants).

Sidebar 1: Pre-study requirements

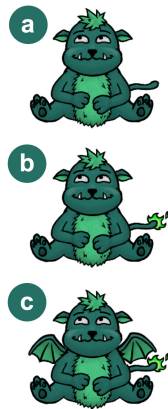


Figure 4: The monster's evolution stages

realization of this concept as browser extension, we used a dummy news website hosting several news articles to perform a pre-study with 18 participants (9 male, 8 female, 1 non-binary; 12 were aged 18-24, 6 were aged 25-31). On the dummy news website (see Figure 2), banner ads for fictitious brands and products were integrated (see Figure 3). Participants were told to playfully deactivate any ad they see by dragging a virtual monster from the bottom left corner of the screen onto the ads. Once the virtual monster was dragged onto an ad, it ate the ad and the user received a virtual item (e.g. a hat, see Figure 1), which could be worn by the monster. After deactivating three different ads, participants were asked what they liked and disliked to establish requirements for the final game concept and its implementation. The set of requirements and an explanation about how they were derived is described in Sidebar 1.

Game Concept

Based on the requirements of the pre-study, we developed a game concept that allows users to deactivate ads playfully by eating them with a virtual monster. This can be done to collect ad-free time, which can be taken to block ads completely. The virtual monster evolves when eating ads, which is reflected by changing its appearance as well as by reaching higher experience levels. Similar to the pre-study, virtual items can be unlocked, which can be equipped. Figure 1 visualizes this game concept. In the next sections, we will provide details for each integrated game mechanic.

Ad Eating and Ad Blocking Mode. To account for **R1** and **R2**, we added an ad blocking mode, in which all ads on websites are hidden, similarly to using a usual ad blocker. Consequently, there are two different modes: the ad blocking mode (all ads are hidden) and the ad eating mode (ads are shown and can be eaten). However, the user may only activate the ad blocking mode if ad-free time is available (**R4**). Switching back to the ad eating mode is always possible. Ad-free time can be collected by eating ads in the ad eating mode.

Virtual Monster and Progression. To account for **R3**, we added several progression loops as well as daily challenges (e.g. eating a certain amount of ads within a certain amount of time to get virtual rewards). The virtual monster has three different evolutionary stages (see Figure 4). In the first stage, the appearance of the monster is not modified and one eaten ad corresponds to one hour of ad-free time. In the second stage, the monster has a burning tail and one eaten ad corresponds to two hours of ad-free time. In the last evolutionary stage, one eaten ad corresponds to three hours of ad-free time and the monster receives wings to reflect the new evolutionary stage visually. Within each evolutionary stage, the monster progresses through different experience levels by eating ads (generating experience points). The monster is in evolutionary stage one for experience levels 1-5, in evolutionary stage two for experience levels 6-14 and in evolutionary stage three for levels greater than or equal to 15. The experience points threshold for each level gets higher with each level.

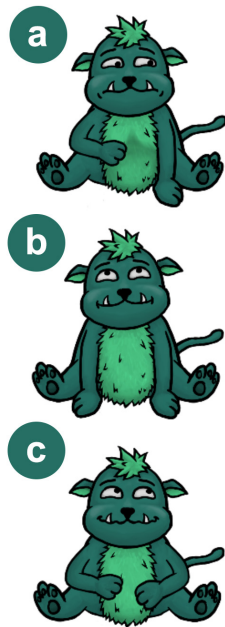


Figure 5: Emotional states of the monster

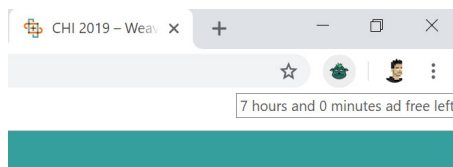


Figure 6: Icon of the ad blocker extension

Eating and Storing Ads. The emotional state of the virtual monster is connected to the amount of ad-free time (thus eaten ads). The monster can eat seven ads until it is fully stuffed. It consumes one ad per hour when in ad blocking mode. As long as there are at least four hours left until the monster is hungry, the monster is happy (Figure 5a). If there are between one and three hours left, the monster is in a neutral emotional state (Figure 5b) whereas it is sad when there are no more ad-free hours left (Figure 5c). In this case, the ad blocking mode is deactivated and the system automatically switches to ad eating mode (in which ads are shown). However, from level two on, there is also a virtual bag whose capacity increases with increasing experience levels. This bag can be used to store more eaten ads, i.e. with increasing experience levels, the user can collect more ad-free time.

Virtual Items and Potions. To offer more variety (**R3**) and reward the user for deactivating ads (**R4**), virtual items can be unlocked by reaching a new experience level. There are four categories for virtual items: hats, glasses, mouth area, and neck area. In all of these categories, virtual items can be unlocked and put onto the monster. For each of these categories, at most one item can be worn at the same time. While virtual items solely influence the visual appearance of the monster, potions affect the amount of ad-free time or the amount of experience points per ad for a certain time. In contrast to virtual items, potions can only be unlocked by mastering challenges.

Implementation

To be able to use our gamified ad blocker on all websites a user browses to, we decided to implement a browser extension for the popular Google Chrome browser.

User Interface and Features. Once the user installs the extension, a monster icon is visible on the top right corner of the browser, indicating the monster's current emotional state as well as how much ad-free time is available (see Figure 6). Once the user clicks on this icon, a pop-up opens, having four different tabs. By default, the first "Overview" tab is active, showing the virtual monster in its current evolutionary stage, its emotional state, all virtual items worn, the current experience level, the amount of ads the monster has eaten and may still eat until its bag is full, the collected ad-free time, how many ads need to be eaten to get to the next experience level and which mode (ad blocking or ad eating) is currently enabled (see Figure 7). The next tab, "Items and Potions", shows all available virtual items and potions. For items that have not been unlocked so far, only their silhouette together with a lock icon is shown (see Figure 8). The "Challenges" tab shows challenges that the user may accept and, if accepted, the user's current progress in the challenge. Last, there is a "Statistics" tab, showing statistics like when the monster evolves, how many items are unlocked etc.

Ad Eating Mode. When users decide to enable the ad eating mode (or no ad-free time is left), the virtual monster appears on the bottom left corner of the screen and an idle animation is active. As stated

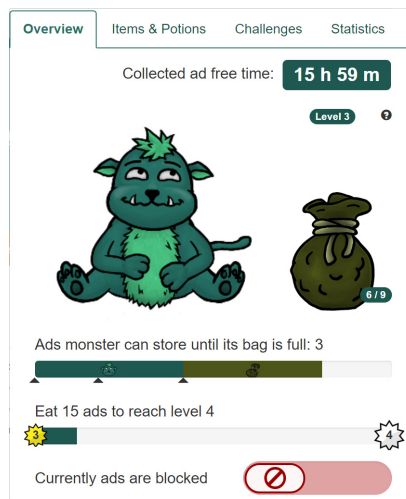


Figure 7: "Overview" tab of the extension

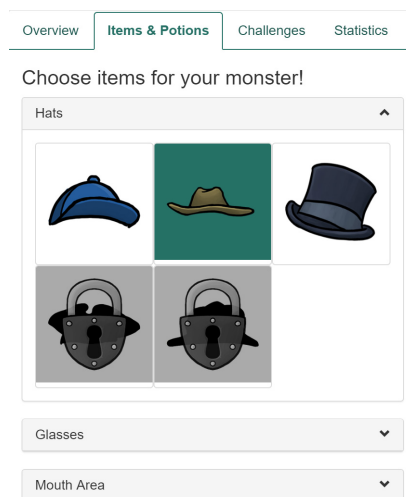


Figure 8: "Items and Potions" tab of the extension

in the concept, ads are shown in this mode and can be deactivated by dragging the monster from the bottom left border of the screen onto the ad. When the monster is dragged, the idle animation is replaced by an animation in which the monster smiles. When the monster is dragged over an ad, the monster sticks out its tongue. Once the user releases the mouse, the monster starts eating the ad and a chewing animation starts while the ad fades out. In this mode, ads that were recognized and can be eaten have a green glow and a monster icon in their upper left corner to indicate that the monster can be dragged onto them. To identify ads, our system has the same blacklist of servers hosting ads as the popular ad blocker "Ad Block Plus" has. However, since it is not enough to intercept calls to such servers, as we also need to identify where those ads are located on the website, we search the DOM of the website for blacklisted URLs and hide or modify the parent DOM element.

Ad Blocking Mode. As long as users have collected ad-free time, they can decide to block ads completely by entering the ad blocking mode. In this mode, all ads are blocked by intercepting calls to blacklisted servers. The ad-free time only decreases when the user is actively using the browser, i.e. if the user minimizes the browser or puts the computer in standby mode, the ad-free time does not decrease.

Animation and Visualization. We created an "idle" (the monster is doing nothing), a "dragging" (the user is dragging the monster), an "over ad" (the monster is dragged over an ad) and an "eating" (the monster eats the ad) animation. To ensure that they work as intended, independent of which virtual items are equipped we split the monster into six different parts and layered them.

USABILITY TEST

We performed a usability test (7 participants, age 25 on average, 3 females, all having an ad blocker installed) using the German version of the System Usability Scale (SUS) [6], a think-aloud approach and the "Expectation Measure" method [1]. In the latter, users are first asked how hard they expect a task to be in the system (before experiencing it) and later have to complete the task within the application and rate how hard they found it to actually be. The idea of this method is that some tasks are inherently perceived as harder than others but that this perception is often idiosyncratic, and thus by comparing expected and actual difficulty, these differences can be taken into consideration. We identified 14 tasks to cover all functionalities of our system (see Figure 9 for a list of all tasks), which had to be rated before interacting with the system and afterwards. The SUS revealed an average score of 78.2 (Min=50.0, Max=92.5, SD=15.0), indicating that the usability of our system is between "good" and "excellent" [4]. The Expectation Measure shows that the average expected difficulty for all tasks except task 12 was either higher than or roughly as high as the experienced difficulty (Figure 9). All but one of the tasks are placed in the upper right "don't touch" quadrant, since they were expected to be more difficult as they turned out to be. These results support that our system provides a good usability. Task 12 was experienced as harder than expected. To explain which effects a potion has, we

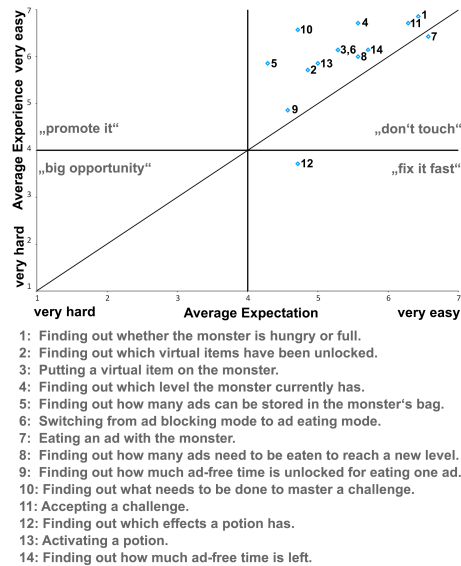


Figure 9: Average expectation and experience ratings as well as task descriptions

used an information box that appeared when the user hovered over a potion. However, as revealed by analyzing the think-aloud transcripts, participants had problems finding this explanation, since they mostly expected it to be directly visible next to the icon of a potion. Thus, we moved the explanation there. Moreover, we added an animation confirming the selection of a virtual item, as participants were not sure whether the item was equipped or not. Also, some participants did not consider the tabs to be interactive, which is why we added a border and a hover effect.

CONCLUSION AND FUTURE WORK

We presented the - as far as we know - first gamified ad blocker. Based on our previous work [2], where we investigated which game concepts to deactivate ads playfully are beneficial for both users and web service providers, we selected the idea of using an ad-eating monster to deactivate ads. In this paper, we describe how we realized and refined this game concept to build a gamified ad blocker. We report findings from a pre-study to establish requirements. Next, we explain the implementation of a mature ad blocker extension for the popular Chrome browser, realizing our refined concept. Lastly, we report findings from a usability test, showing that our system provides a good usability, and explain how we fixed usability issues that were found. As a next step, we plan to release the extension in the Chrome Web Store to study the effects of such a gamified ad blocker in the wild.

REFERENCES

- [1] William Albert and E. Dixon. 2003. Is This What You Expected? The Use of Expectation Measures in Usability Testing. *Proceedings of Usability Professionals Association 2003 Conference, Scottsdale, AZ*. (2003).
- [2] Maximilian Altmeyer, Kathrin Dernbecher, Vladislav Hnatovskiy, Marc Schubhan, Pascal Lessel, and Antonio Krüger. 2019. Gamified Ads: Bridging the Gap Between User Enjoyment and the Effectiveness of Online Ads. *CHI Conference on Human Factors in Computing Systems Proceedings (CHI 2019)* (2019). <https://doi.org/10.1145/3290605.3300412>
- [3] Mimi An. 2016. Why People Block Ads and What It Means for Marketers and Advertisers. *Hubspot Research* (2016).
- [4] Aaron Bangor, Philip Kortum, and James Miller. 2009. Determining What Individual SUS Scores Mean: Adding an Adjective Rating Scale. *Journal of usability studies* 4, 3 (2009), 114–123. <https://doi.org/66.39.39.113> arXiv:978-0-9846455702-0-1
- [5] Jenny V. Bittner and Jeffrey Schipper. 2014. Motivational Effects and Age Differences of Gamification in Product Advertising. *Journal of Consumer Marketing* 31, 5 (2014), 391–400. <https://doi.org/10.1108/JCM-04-2014-0945>
- [6] John Brooke. 1996. SUS - A Quick and Dirty Usability Scale. *Usability evaluation in industry* 189, 194 (1996), 4–7. <https://doi.org/10.1002/hbm.20701>
- [7] Michelle R. Nelson. 2002. Recall of Brand Placements in Computer/Video Games. *Journal of Advertising Research* 42, 2 (2002), 80–92. <https://doi.org/10.2501/JAR-42-2-80-92>
- [8] Ralf Terlutter and Michael L. Capella. 2013. The Gamification of Advertising: Analysis and Research Directions of In-Game Advertising, Advergaming, and Advertising in Social Network Games. *Journal of Advertising* 42, 2-3 (2013), 95–112. <https://doi.org/10.1080/00913367.2013.774610> arXiv:1111.6189v1
- [9] Moonhee Yang, David R. Roskos-Ewoldsen, Lucian Dinu, and Laura M. Arpan. 2006. The Effectiveness of In-Game Advertising: Comparing College Students' Explicit and Implicit Memory for Brand Names. *Journal of Advertising* 35, 4 (2006), 143–152. <https://doi.org/10.2753/JOA0091-3367350410>