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Modeling the Perceptual Response from Effects Oriented Web Components Towards Lower Intrusiveness

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Abstract

The design of web applications includes the use of components that attempt to increase influence on target audience to achieve expected results in the form of interactions. In this area, conflicts between user experience and business goals are observed, especially when primary tasks within a website are negatively affected by intrusive marketing messages. The proposed in this paper approach based on perceptual experiments is related to modeling the structure of interactive objects and building an inference model, with the main purpose being to determine the response from web users using different levels of influence. The obtained results, compared with online responses from an actual campaign, provide the possibility to adopt compromise solutions through designing Internet applications with an expected outcome and minimizing negative responses without interfering with user experience.

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1. Introduction

The process of creating websites and their elements, such as recommending interfaces, headers and advertising banners, includes different approaches and methods depending on the area of application. Typically, the main objective is to provide applications and systems that satisfy the requirements for usability and user experience. The process starts with the design of standard web applications [19] and continues to the design of complex social platforms [28] with the use of participatory and collective intelligence approaches [40]. Usability of systems is tested using heuristic evaluation and other methods [8]. Over the last few years an important trend has been based on orientation on effectiveness of websites, especially when direct effects are a key element of the business model [42][41][26]. The marketing messages in these cases are integrated with interactive components and their role is to increase the number of interactions desired by the website operator [23][25]. Maximizing conversions based on the number of users performing expected interactions in relation to all website visitors is often done at the expense of other parameters related to the evaluation of the usability of the system [35]. Due to audience's limited ability to process information, designers have to deal with situations in which the growth of persuasion does not lead to the expected increase in a website's efficiency [24][23]. On the other hand, to increase efficiency, designers should consider the possibility of desensitization and limited perception of the provided marketing content related to the observed banner blindness phenomenon [4][3]. Combining the above areas can lead to an increase in website intrusiveness and contribute to a reduction of the long-term effectiveness of marketing activities. The purpose of this study is to propose a design approach that allows acquisition of an acceptable level of effects with limited negative impact on users. This paper presents a solution based on the generalized adjustable structure of the interactive object and the use of perceptual experience, combined with online results. The basis of the presented concept is a fuzzy inference model which allows monitoring of the relationship between the response and persuasion levels of individual elements such as advertising banners, headers or call to action messages. The most important result is a new approach to testing and evaluating interactive components using aggregated influence with both perceptual and online experiments showing relationships between elements based on animations, flashing frequency, number of active elements and the space covered by them. The results include the ability to integrate a fuzzy model in the design process and operational applications with main goal to analyse response and adjust persuasion level towards lower intrusiveness.

2. Related work

2.1. Persuasive design of online systems

Among areas related to web design, the applied methods focus on providing functionality and usability of the system based on human-computer interaction combined with psychology of human factors or sociology [37][38]. The way the web components are designed influences perception, which is defined as "an organisation and interpretation of sensual experiences in order to understand the surrounding" [22]. During the process of design of elements within a system, information architecture plays an important role and refers to the process of structuring information that can help in the design of information management systems, navigation and search [34]. Activities directly related to web design focus on creating effective websites and getting better results in the form of interactions such as clicks, registrations or software downloads [41]. In addition to user targeted approaches, an evolution is observed in the direction of effects-oriented websites with conversion factors based on the number of acquired interactions in relation to the number of website visitors [36][42][26]. Analysis of effects within a website is mostly done in relation to actions performed by users that are expected by the website operators [1][44]. To increase the number of interactions, persuasive communication is used with persuasive technologies developed in areas related to web applications, including ecommerce, social platforms and customer service systems [12][18]. Persuasive communication is described as any message that can be used to alter cognition, attitudes and behaviors [32][20]. A behavior model for persuasive design has main factors such as skills, motivation and the ability to perform the assumed behavior [10]. Persuasive interfaces can be considered in connection with the sub modules or other smaller components aimed at achieving targets based on microsuaion and can appear in dialog boxes, advertising banners, recommending interfaces or website headers [9].

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