Interactive augmented reality marketing system

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Abstract. Choosing the right way of advertisement to get the customer's attention is one of the hardest tasks a company has to face. Companies are aware that the advertisement will receive more attention if it stands out among others. That is why the way of advertising is constantly changing. This article presents interactive augmented reality advertising system. It consists of a camera, screen and software on the computer. The system inserts thoughts in real time to the visitors in front of the camera in the form of comic books speech balloons, which augment live video on screen, while the content follows the predetermined scenario. The system was tested at two fairs and the impact on visitors was remarkable. The visitors stopped almost always, engaged with the system and had fun. Due to these facts we believe that such systems will change marketing strategies in the near future.

Keywords: computer vision, advertising, comic captions, augmented reality.

1 Introduction

The number of ads that we encounter every day is increasing rapidly. With too many of them around us, many of them are never noticed. Consumers only remember those ads that stand out from the crowd. Thus, companies are forced to advertise with the new and innovative techniques.

The motivation for the development of this system comes from the psychological barrier that we fell, when walking by a promotional point where the sellers are trying to convey their information that are not critical for us at that moment in various ways. Due to this fact, we developed and tested the system that attract, inform, and motivate potential users/visitors/customers in an effective, engaging and fun way.

2 Related work

For years augmented reality (AR) has been touted as an important technology of the future as it provides a digital enrichment of the physical world. Specifically, it projects images or information that augments what users see. AR use is growing, also in marketing systems [1]. Interactivity in the media can be achieved in different ways.

In recent years, due to great advances in computer technology, computer vision techniques and algorithms are used for interactive marketing systems combined with AR.

AR is mostly used by marketers to promote new products online. While such systems are already widely known and used, we present some of them hereinafter. For example, in 2008 famous car company ran an AR advertisement in several German automotive magazines. The reader simply had to go to car manufacturer web site, show the ad in the front of the webcam and 3D model of the car appeared on their screen [2]. Another interesting solution is Magic Mirror combined with high-tech footwear technology for measurement, which enables user to virtually try on shoes prior to buying/ordering them. The user is able to see his/her reflection in the Magic Mirror with a virtual model of the pair of shoes [3]. Similar examples to Magic Mirror use of AR for advertising and commercial application lies in fully replacing the need to try on anything in stores, thus, saving considerable amount of time for clients, which would most likely be used for trying on more clothing (shirts, dresses, watches, etc.) and, thus, increasing the stores chances for selling. Similar to Magic Mirror solution is also Cisco's AR commercial, where a client is trying on clothes in front of a Magic Screen [3]. Another interesting solution is presented in [6], where author presents how to achieve gender classification using computer vision algorithms. Such a solution is especially useful for augmented reality marketing applications.

AR applications are also used in entertainment, education, medicine, on mobile phones etc. [3].
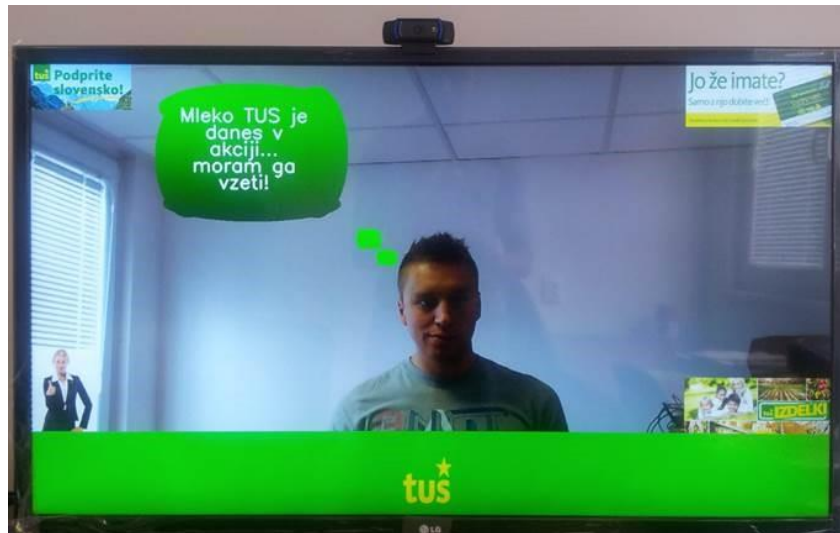

Fig. 1. Augmenting live video with comic books speech balloons.

3 System overview

Computer vision is the cornerstone of the developed system. For the operation of the system we need computer, camera and screen. System captures image from the

camera and finds faces with the face detection algorithm [4]. Based on the detected face position, the comic caption appears – just above the user's head. Of course, the system runs in real time. The content of the comic caption is filled with the text or image. The content, which appears in the comic captions, is predetermined and told as a story (Fig. 1). With such use of the system we get customer's attention (he or she becomes the star of the moment) and can advertise the product or service in a fun and efficient way. If the system does not detect any face, it starts running advertisements in the form of full-screen moving images [5].

The user of the system can set various different options, which affects the operation of the program. One of the most important settings is region of interest (ROI), which defines the area, where the face detection algorithm searches for new faces. The ROI covers only a part of the captured image, because it is not practical to search faces in the entire image. By reducing the ROI, we greatly reduce the burden of the algorithm for face detection. When the face is found, the system constantly tracks the face that is currently selected. This is done with the face detection algorithm, which searches in the extended area of the last detected face. This extended area can be set in options. In addition to face detection and tracking, the system must also include a space to display advertising messages. Thus, this is done using the comic books balloons, whose shape and color can also be adjusted. The system also contains some non-interactive content – images, which we can optionally distribute across the screen. This setting can even better expose the company, product, or service, which we advertise. The actual use of non-interactive content is shown in Fig. 1, where the images are added in the left and right corner and in the bottom of the screen.

Fig. 2. System use in real environment.

4 Test results

The system has been tested in a real environment at two fairs, first one was Hairdressing fair, held in Celje, Slovenia, in 2012, and the second one was Investment conference Coinvest, held in Nova Gorica, Slovenia, in 2013. The impact was astonishing. The visitors have stopped almost always, especially, when there was a group of people that came together. Time spent in front of the screen was largely dependent of the scenario currently shown on screen. Thus, the visitors stood before the system longer if the shown story was interesting, because they wanted to know what will follow (Fig. 2). While the content in the balloon was also very important to middle age and older people, younger people were entertained with the fact that they saw themselves on the screen and even more so after the balloon drew over their head and changed its position accordingly to their moves.

5 Conclusion

In our interactive augmented reality marketing system the user becomes the main actor. It tracks people's faces and "reads" their thoughts. All actions are reflected on the big LCD or projector screen. The information in the form of text and images are written in scenarios and presented as comic books speech balloons. Thus, it is ideal for conveying the information to potential clients/users in a fun and efficient way in public displays, fairs, on the shelves in the store, hotel receptions etc.

REFERENCES

1. S.J. Vaughan-Nichols, Augmented Reality: No Longer a Novelty?, *Computer* , vol. 42, no. 12, pp. 19,22 (2009).
2. Cool: Augmented Reality Advertisements, *http://geekologie.com/2008/12/cool-augmented-reality-adverti.php* (2008).
3. J. Carmigniani, B. Furht, M. Anisetti, P. Ceravolo E. Damiani, M. Ivković, Augmented reality technologies, systems and applications, *Multimedia Tools and Applications*, vol. 51 no. 1, pp. 341-377 (2011).
4. P. Viola, M. Jones, Rapid Object Detection using a Boosted Cascade of Simple Features, *IEEE Computer Society Conference on Computer Vision and Pattern Recognition*, pp. 511-518 (2001).
5. A. Hočevar, *Interactive advertising system based on face detection*, Diploma thesis, Faculty of computer and Information Science, University of Ljubljana (2012).
6. T. Kunst, *Application for analysis of promotions based on computer vision*, Diploma thesis, Faculty of computer and Information Science, University of Ljubljana (2012).