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Trends of the augmented reality development in multimedia applications

Trends of augmented reality development in multimedia applications are analyzed according to the patent research.

Nowadays the technology of augmented reality is the new innovative technology that is being developed side by side with the technology of virtual reality and the artificial intelligence technologies implemented in different application [1].

Applications with elements of augmented reality are becoming more and more popular and are distinguished by the peculiarities of perception comparing with perception from usual multimedia applications without implemented augmented reality. In case with the applications with built-in augmented reality the user sees objects of the real world supplemented by additional content [2-4].

To investigate the trends of the technology of augmented reality and its usage in multimedia applications, a patent research has been conducted [5,6]. The retrospective of patent research is 10 years (2008-2018). As a result of the patent research it was selected 206 patents. For the research next keywords and tags were used: mixed reality, augmented reality, augmented reality in applications, devices for the augmented reality usage.

An increase in the number of patents each year proves the relevance of chosen research about augmented reality technologies in multimedia applications. It was drawn cumulative curve that demonstrates dynamics of the inventions patenting according to the subject of patent search and years of publication (fig 1).

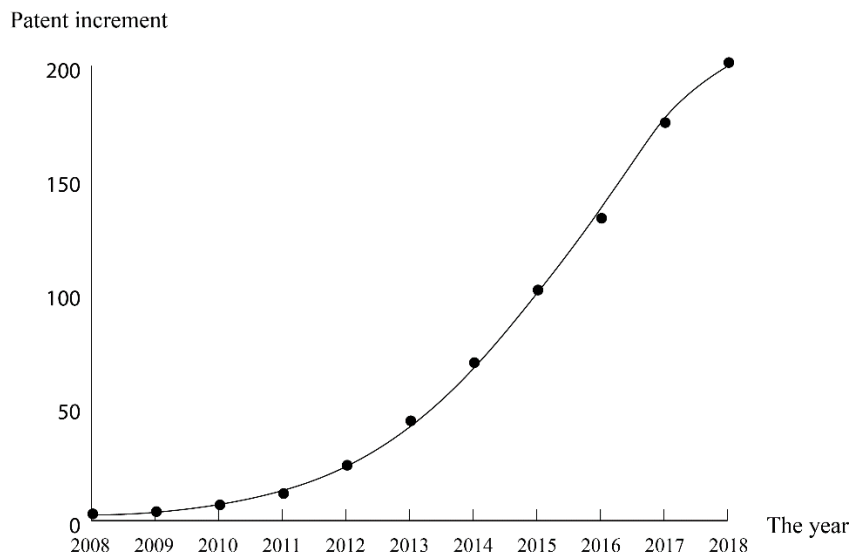


Fig. 1. Dynamics of the inventions patenting according to the subject of patent search and years of publications

The ratio of the number of patents has been analyzed according to the direction of patent research (Fig. 2)

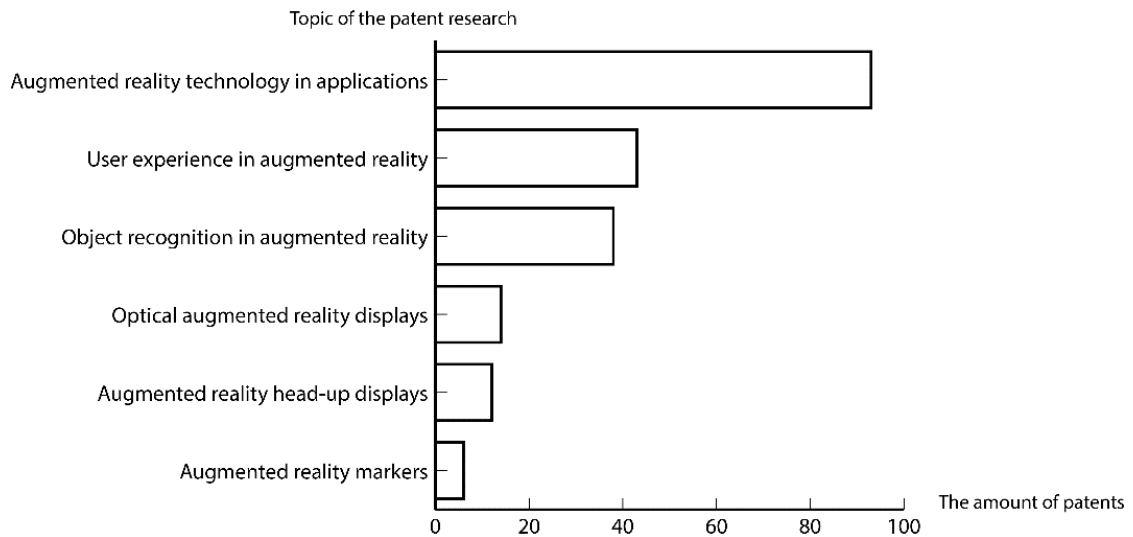


Fig. 2. The ratio of the number of patents according to the direction of patent research

The largest number of patents (93 patents) is devoted to the technology of augmented reality indifferent applications and also to the research about user experience in augmented reality (43 patents).

It was analyzed the number of patents by applicant companies. The result is shown in the fig. 3

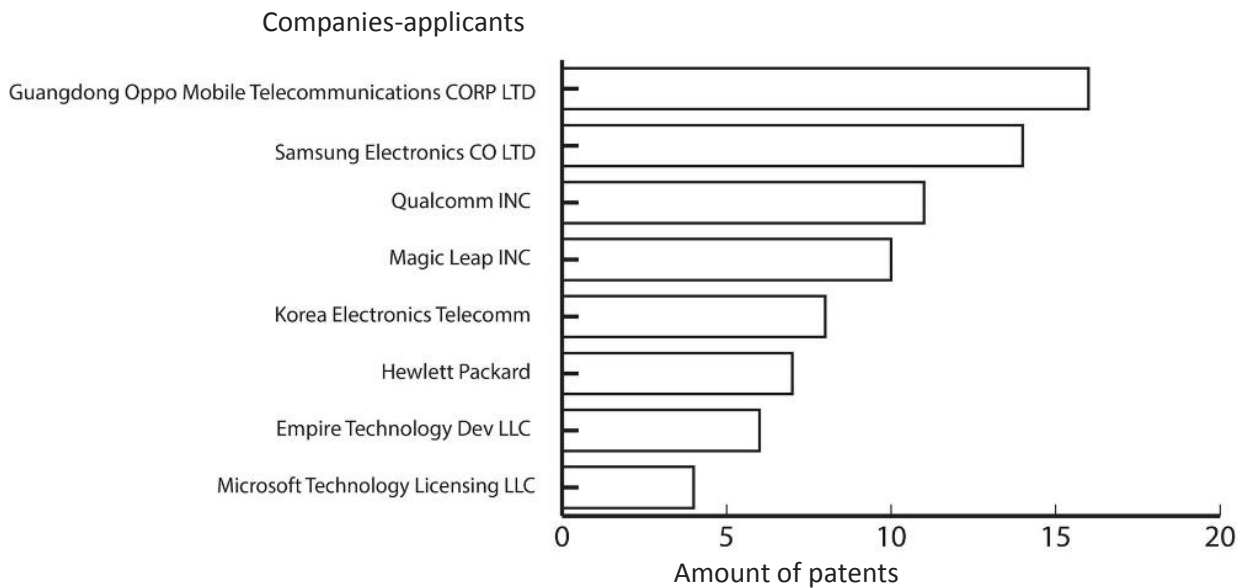


Fig. 3. Number of patents ratio by applicant companies

The largest ammount of patents belongs to Guangdong Oppo Mobile Telecommunications Corp Ltd (21.52%), Samsung Electronics CO LTD (17.72%), Qualcomm INC (15.19%), and slightly less Magic Leap INC (13 , 92%), Korea Electronics Telecomm (10.13%), Hewlett Packard (8.86%) and the smallest amount is from Empire Technology Dev LLC (7.59%) and Microsoft Technology Licensing LLC (5,06%). Other patents not represented in this ratio are submitted by 1 from a certain company-applicant.

It was conducted the research about the distribution of patents by country and the result is shown in the diagram, presented in the picture 4. The largest number of patents is registered in the United States and Korea. Ukraine has 1 patent registered, which is a utility model for disseminating information with the use of augmented reality technologies.

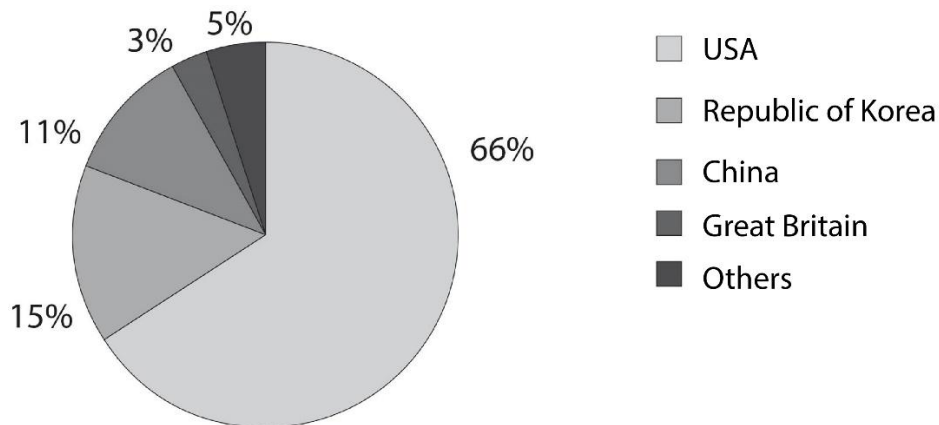


Fig. 4. Ratio of distribution of patents by country

It was analyzed that the most spread classifications according to the directions of the patent research are: G06T19/006 – mixed reality; G06F3/011 – arrangements for interaction with the human body, e.g. for user immersion in virtual reality; G02B27/01 – head-up displays, G02B27/017 – head mounted; G01S5/16 – position-fixing by co-ordinating two or more direction or position line determinations; Position-fixing by co-ordinating two or more distance determinations using electromagnetic waves other than radio waves.

The descriptions of investigated patents show that augmented reality technologies allow people to develop a wide variety of multimedia applications for a wide range of users [7-25].

In conclusion one may say that the subject of research is relevant because each year more and more leading well-known companies register patents that are connected with augmented reality technologies in multimedia applications and connected with the development of devices which are used for the recognition of objects of augmented reality [14]. But also the patent research shows that in Ukraine is not so popular among companies to research the features of augmented reality usage in multimedia applications.

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