

Abstract

A Study on Augmented Reality, Big Data and Copyright Infringement

Park, Yusun*

Augmented reality is reality that is augmented by AR technology. Augmented reality is an enhanced version of reality created by the use of technology to overlay digital information on an image of something being viewed through an AR device. The virtual reality offers a digital recreation of a real world and gives users virtual experiences in a computer-generated 3D environment separate from the real world. On the contrary, the Augmented reality superimposes digital information on the real world that the user normally perceives.

The concept of augmented reality and virtual reality was established in 1994 when Paul Milgram et al. Introduced the concept of “Virtuality Continuum”. The Virtuality Continuum extends from the completely real through to the completely virtual environment with augmented reality which is close to the real world and augmented virtuality which is close to virtual world ranging between augmented reality and augmented virtuality are often called mixed reality.

Big data is defined as “information technology for extracting valuable information by utilizing and analyzing large amount of data, and actively responding or predicting the change based on the generated knowledge”. Although there is no agreed definition of big data, attempts are being made to define big data in various aspects such as analytical and value aspects as well as data size and technical aspects.

As big data is truly meaningful when data, technology, analysis, and utilization are combined into one, “[B]ig data is a process to deliver decision-making insights. The process uses people and technology to quickly

* Expert Advisor at Korea Invention Promotion Association

analyze large amounts of data of different types (traditional table structured data and unstructured data, such as pictures, video, email, transaction data, and social media interactions) from a variety of sources to produce a stream of actionable knowledge.”

As the AR provides information to the user by superimposing the digital information on the real world without being physically restricted like the virtual space, it is possible to display data layer by layer and the user can retrieve the related information with his fingertip. AR can be a very useful means to efficiently visualize big data and enables users to acquire, understand, and display information without restrictions or obstacles in the real world. At the same time, the dissemination of mobile devices, social networks, online transactions, Internet of things can generate zeta bytes of data that can be of tremendous value when analyzed and reprocessed.

In order to disseminate AR, it is necessary to have contents that fit for the purpose of an AR app, and information that connects users with his surrounding environment. Also, AR technology also constantly creates new data through user's interaction with the reality. AR device or AR application seeing and identifying real-life objects records, tracked and collects a great amount of information from the real world. The enormous amount of data collected via AR implies the possibility of being used as valuable data after analyzing and reprocessing. Therefore, combining AR and big data can be an opportunity to accelerate the convergence through the 4th Industrial Revolution.

The amount of data held by the AR system is very important because it may affect the quality of the service, and attract customers, and ultimately determines the success of the AR app. When the AR device recognizes an object sensed by the user, the AR app starts searching the matching image or data in its internal database. If the matching image or information can not be found in the internal database, the app sends request to the server for matched images and related information or uses a crawling robot to extract data from the Internet including various webpage or social networking sites. The recordings and pictures taken via an AR device would not be protected under Copyright Act. In photography, choices are made with regard to subject,

pose, background, exposure, lighting, composition, and equipment. Unlike photography, an AR user simply points the camera of the AR device at any building or object and the recording is made automatically. For copyright protection to apply, the creator must have had the power to make subjective choices that affect the resulting images. Without this discretion, and the concomitant possibility of alternative outcomes, there can be no creativity.

The data scattered on the Internet may exist in a form to be systematically searched, retrieved and used or it may not. The data varies or is dispersed in such a way that they can not be managed or analyzed. The data gathered and collected via an AR device can also be big data which has not been processed and managed. If the data extracted on the Internet is a copyrighted work, copyright infringement may occur in the process of extracting, storing and visualizing the data for AR as this process is inevitably accompanied by the reproduction, modification and transformation of the copyrighted work. In addition, the data displayed on the AR device is not the same as the original data found in the Web. The data will be modified and transformed to fit for purpose of the AR app and user interface and combined with video, graphics and other content or information.

This paper will address copyright infringement issues which may occur during in the process of the data extraction and modifying and transforming data for posting on AR devices. Also, this paper will address copyright issues involved with big data collected and accumulated via a AR device.

Keywords

Augmented Reality, Mixed Reality, Copyright Infringement, Data extraction, Scraping, Big Data, AR device, Database, Compilation