Computer vision, AI, AR technology in various industries

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ABSTRACT

AR technology is currently the most popular human-computer interaction interface. We get a spatial point cloud through computer vision and AI technology. And completed several projects according to different scene requirements.

1   INTRODUCTION

In recent years, computer vision and AI technology have continued to improve, and have been successfully used in many industries. AR technology is currently the most popular form of human-computer interaction, and a large number of related technologies using computer vision and AI. We use different sensors, including TOF camera, multi-axis IMU hybrid RGB camera, to obtain spatial point cloud through SLAM or VIO technology, and then use different algorithms to obtain the coordinate relationship between users and the environment, and finally design in different industries as shown in Fig.1&2 [1,2]. Develop different AR interactive solutions.
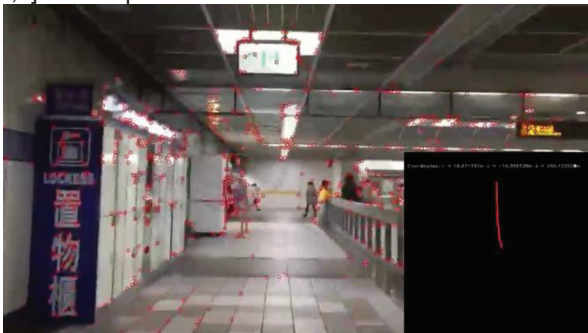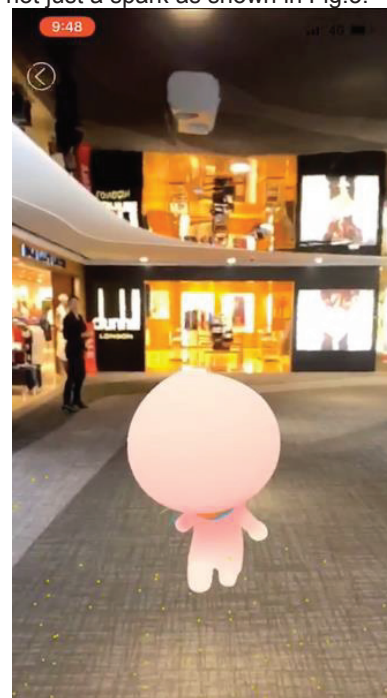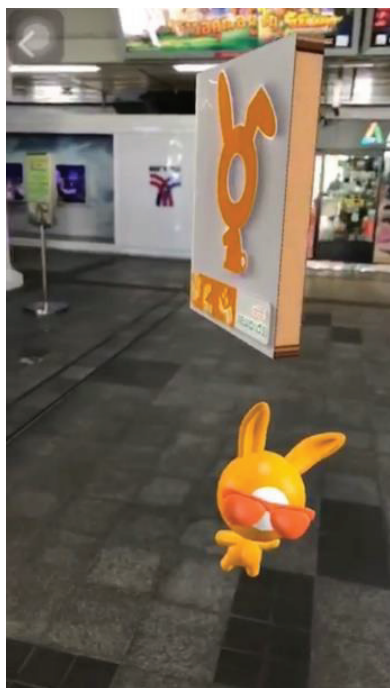

Fig. 1 SLAM technology

(a)

(b)

Fig. 2 (a)shows the sparse point cloud of OSENSE Technolog (b)shows the corresponding location

We have applied cases in various fields such as transportation hubs, department stores, museums, sports fields, etc. The challenges here are not only computer vision, AI, AR and other technical issues, but also how the demand in different industries can be satisfied, not just a spark as shown in Fig.3.

(a)

(b)

Fig. 3 AR Indoor navigation technology in two real cases: (a)shows the AR navigation project in Taoyuan International Airport, Taiwan. (b)shows the Rabbit Reward project in Bangkok, Thailand.

Fig. 4 Using computer vision and AI technology to generate AR effects in sports fields

Fig. 5 Generate instant tactical maps through AI technology with high-speed cameras

The pain points of different industries need to be solved by more experts in different fields. Whether new technologies can be successfully applied and generated in various industries is often because of the ability to effectively integrate different talents. However, since the focus of AR technology is the interaction between people and machines and the environment, the synergy between the three is very important. considering the acquisition of spatial information, the computing power of the machine, the cloud architecture and the high frequency bandwidth brought by the future 5G. The possibility and future should be very worth waiting. The way of understanding space is even more from the most common optical detection, to a signal-mixed solution (including RF and ultrasonic technology).

It is particularly worth mentioning that after several years of industry experience, the team decided to invest more in sports events. Computer vision and AI, the integration of AR technology in the sports industry has exceeded 25% per year in recent years. The high growth rate is erupting. And whether it is the owner of a professional team or the experience of a fan, the value of these new technologies is very much needed.

Since 2000, a wide variety of network platforms have appeared. The form of User Generated Content (UGC) has become mainstream. In recent years, the traffic dividend of web applications has slowly ended, and major players in the market are looking for new sources of traffic.

There is a trend that off line to on line is getting more and more attention. Therefore, it is an emerging practice to collect information in real space through various sensors and collect it into the server through appropriate processing.

The industry can conduct various analyses through these data sources, and through customized processing, complete subsequent commercial applications. In recent years, due to the rise of AI technology, more and more sensors will join the AI technology when entering the server, so that we can get more useful information.

Take the baseball field as an example. We have set up many cameras and industrial computers on the spot. Therefore, we can analyze more details of the game while playing the game through AI technology. We can design a set of player value evaluation system, and also tell the trainer the player's physical condition. We can also broadcast the details of the baseball flight trajectory calculated by the AI /CV technology, the player's running speed, etc. to the on-site fans through AR UI (Fig6), even can predict the next game status and give it to the lottery users (Fig7).
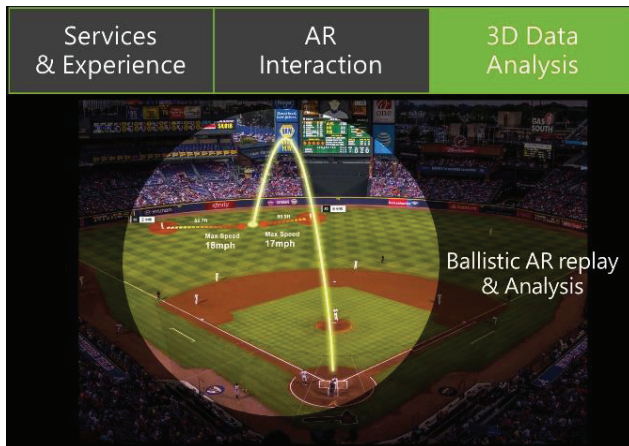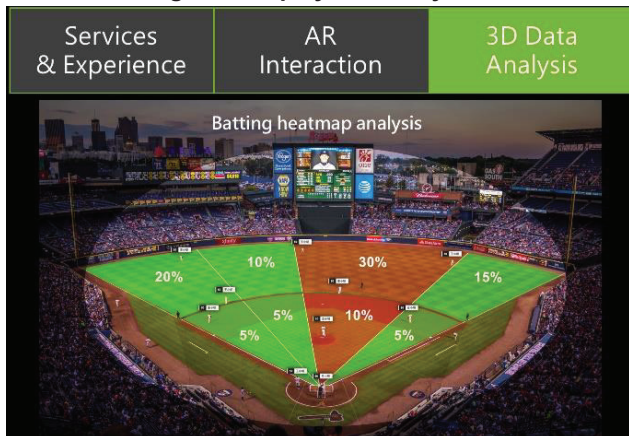
Fig. 6 AR replay and analysis

Fig. 7 Batting heatmap analysis

This way of generating content from AI, we call it AI Generated Contents (AGC). We believe this will become a very important mainstream in the future O2O business era.

2   CONCLUSIONS

We believe that AI, AR and CV-related technologies will become key technologies for human and machine interaction with the environment. In our foreseeable future, humans can interact with machines in a more intuitive and simple way. And it's easier to get information about the environment and even change the environment. In the process of industrialization, the mastery of information has always been an important issue. The emergence of new technologies will continue to change humans in different industries. In the past, the future will be the same.

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