

# IMPROVEMENT IN PICTURE PUZZLE DETECTION USING BOT IN AUGMENTED REALITY

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## ABSTRACT

This paper propose a system that uses a augmented reality technology with picture puzzle detection. Using a FREAK and FAST algorithm to improve picture puzzle and also used bot system for further improvement. This proposed application composed a two major processes: Image detection and Augmentation. From the experimental results, the accuracy of image detection is 90%. Virtual Reality immerses the user only in an artificial environment; Augmented Reality (AR) allows the user to overlay reality with a artificial world. The possibilities for educational value in these overlays are very useful.

**Keywords :-** Augmented Reality, picture puzzle detection, Education with Augmented Reality, BOT.

## 1. INTRODUCTION:

- Due to the recent development of advanced technology, virtual reality and augmented reality are being utilized in various fields. Especially, education in connection of augmented reality with diverse fields has been actively provided as a part of improvement for creativity of infants in their education. Augmented reality is a sub-field of virtual reality and also a computer graphic technique for making objects seem to exist in the original environment by synthesizing virtual objects or information in the real environment. Unlike the virtual reality that assumes a total virtual world; augmented reality is to increase a sense of reality by combining virtual objects with real world and hence is called as mixed reality. Augmented reality is in a limelight as the next generation display technology in 'Internet of Things' (IoT) technology or others that are appropriate in ubiquitous environment [1] AR can stimulate several senses at the same time, leading to improved learning skills (with practice – brain can be rewired to optimize performance) and memorization. With improved AR interfaces additional senses (five senses – sight, sound, taste, smell and touch) could improve cognition of information, and therefore learning process.[2]
- Augmented reality (AR) combines the real world with virtual information to improve the observation, which cannot observe by naked eye. The advantages of AR include integrating reality with virtual, real-time interactive, accurately locating 3D objects, AR supported system allows students interact with context instead of paper on the traditional course, even more, immerse students in a knowledge from learning activity and enhance the communication between group members . Scholars have reveled through AR learning systems in a field trip, adequate guiding students focus on the learning objects, helping them operate science tools, quick response to understand learning condition. More important, since AR apply to aware students" location in order to implement "context-awareness" which sensing students" current location and provides relative learning materials.[3]

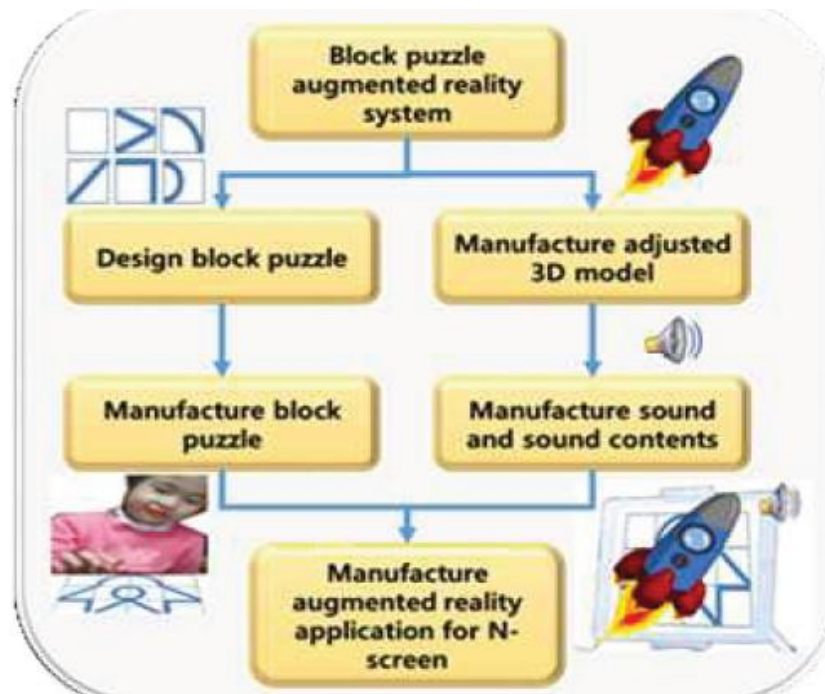


Fig -1: Picture Puzzle Detection System using Augmented Reality[1]

## 2. LITERATURE REVIEW:

- Lakshmi Prabha N. S. Alexandre Santos, Dimitar Mladenov, Olga Beltramello, [5] proposed AR system was demonstrated to the psychologists and teachers for their feedback. They found that this system will help students and teachers too and will help them learn new things. From teachers point of view, the proposed system will help the child in different aspects, such as identification, learning, recognition and understanding of things, colors, shapes, names etc. psychologists found that this system will increase the brain power and creativity of students.
- Hui-Chun Chu; Yu-Hsuan Sung, [4], proposed EduAR application. EduAR application applies image detection and augmentation techniques to make a new style of learning, which attracts learners to continuously study by themselves. The proposed application is separated into two components, which are mobile application developed by using OpenCV library with MySQL management to handle the information and web application in PHP language, which allows the instructors to conduct contents of their lesson.
- Bojan Kraut and Jelena Jeknić, [2] introduce education experience is improved with use of augmented reality. With use of AR, users can remove the boundary between real world and virtual world. Digital data is used in real world, which makes a great user experience. AR systems also provide analysis of user behavior and user interactions. Data is stored in cloud for further process. AR can enhance the experience of students in education with new technologies. Interactions of students are increased with use of augmented reality systems and also increase the learning ability of students.
- Muhamad Fadhil Norraji, Mohd Shahrizal Sunar, [6] introduce wARna is a mobile-based interactive Augmented Reality coloring book that identifies texture from the coloring book to be mapped onto the corresponding 3D content and employs marker-based detection in the form of frame marker for the augmentation part. To make up the system, three core use cases are generated.

- Mhd Wael Bazzaza, Mona Alzubaidi, M. Jamal Zemerly, Luis Weruga, Jason Ng, [9] This paper demonstrates how language literacy education, for younger learners, can be improved and enhanced with augmented immersive reality technology. Despite cultural differences in the way of learning, particularly between the Western and Eastern context, it concurred some of the relevant research work conducted in the field and shows the same result findings, for Arabic literacy education, in the Middle- East region. As a proof of concept, an Arabic children storybook was supplemented with an augmented immersive reality application, which includes automatic audio narration with animated 3D graphics that play autonomously when the relevant page of the book is in view of the camera.

### 3. PROPOSED METHOD:

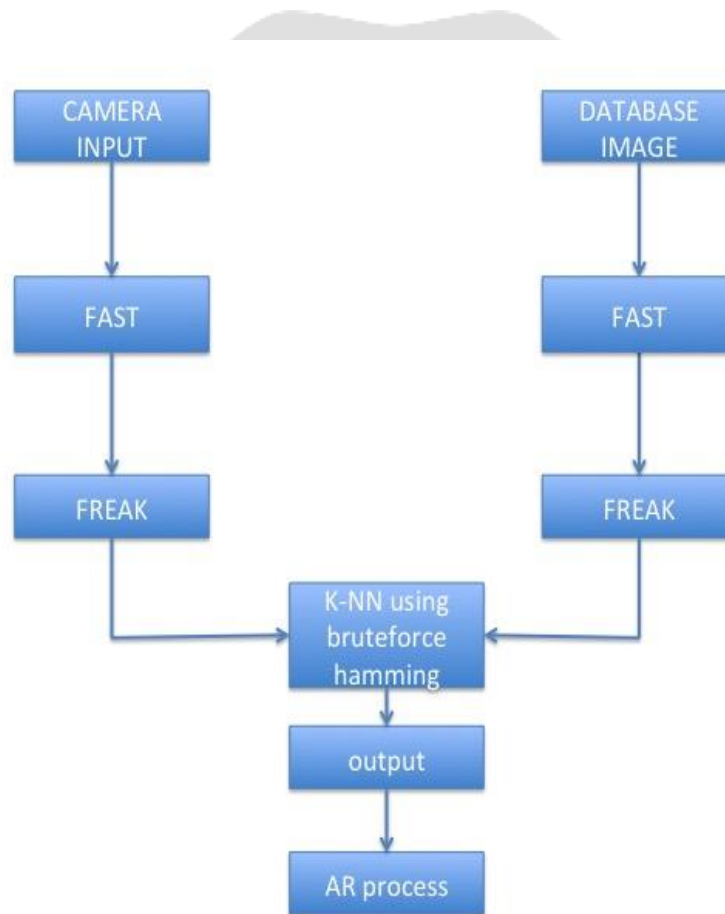


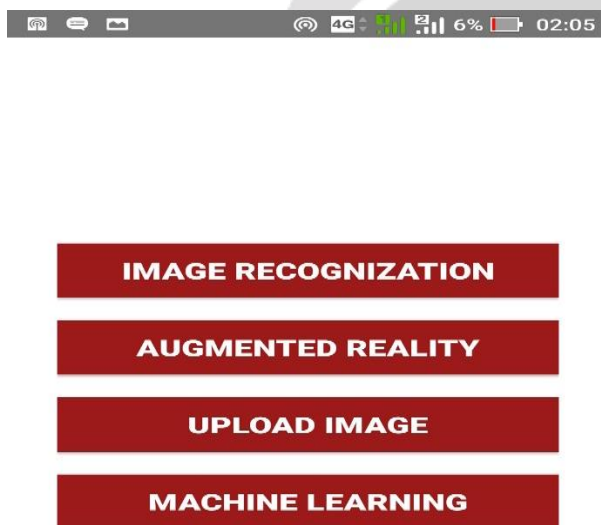
Figure 2: Proposed Flowchart

#### 4. RESULT ANALYSIS:

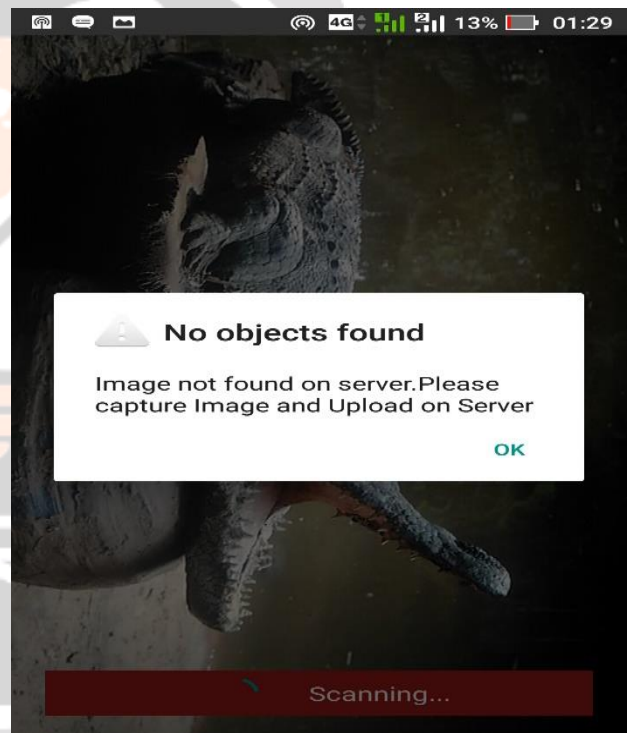
For experimental setup, we use android application as experimental software and use android smart phone which has camera resolution more than 13 megapixels and support technologies of communication such as Bluetooth, GPRS, GSM, EDGE, HSDPA, Wi-Fi, 3G, 4G.

- **Matching Performance and Time Delay**

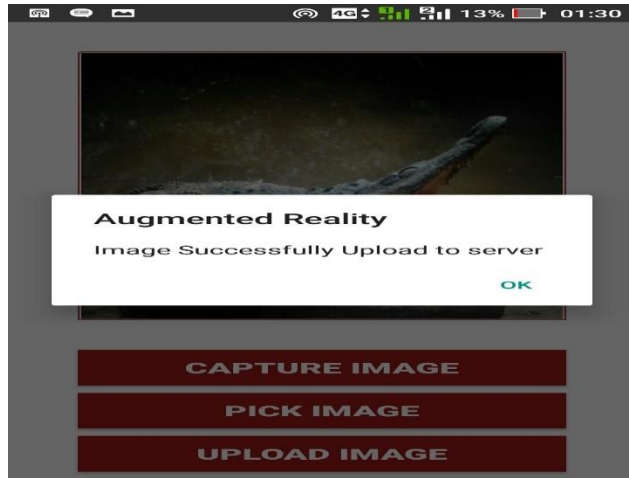
For the experiment, we used Asus Zenfone Selfie which has an Android 6.0.1 Marshmallow as an operating system, Dual Core processing 1.5 GHz, memory 16 GB and RAM 3 GB and 100 test images. For the experimental result of matching performance, our application can detect 100 images out of 100 and there are total 90 images that can be detected correctly. Therefore, the accuracy of our application is 90%. Next, we tested the time delay of detection method. We decided to test the time delay of each image that we can detect from the previous test (100 images). The average case of this result is 5.9214 second and has the boundary value between 3.376 second and 20.417 second.



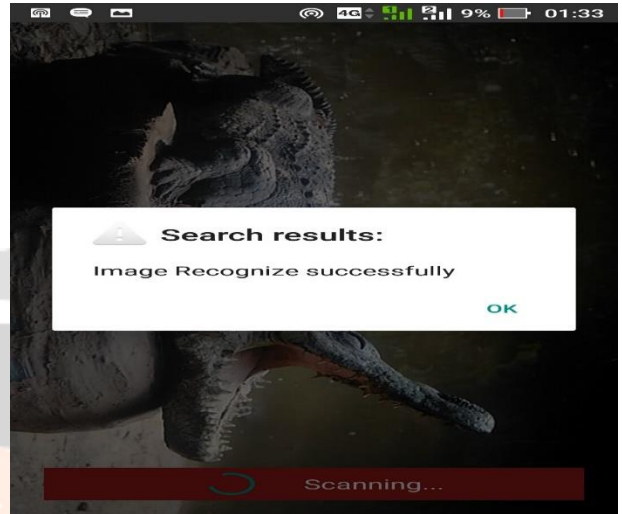
Screen Shot-1



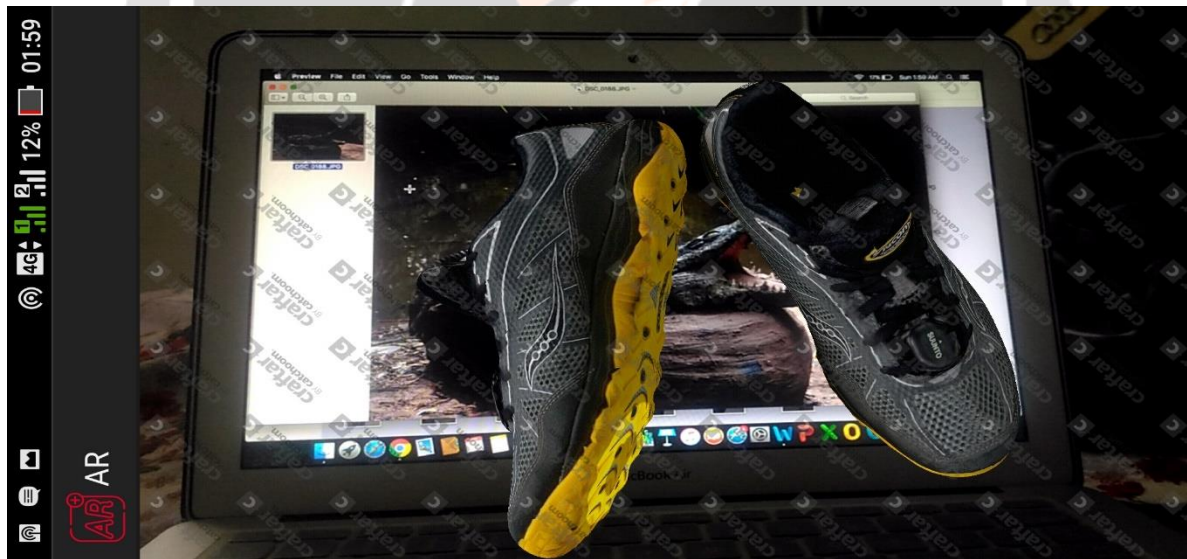
Screen Shot-2



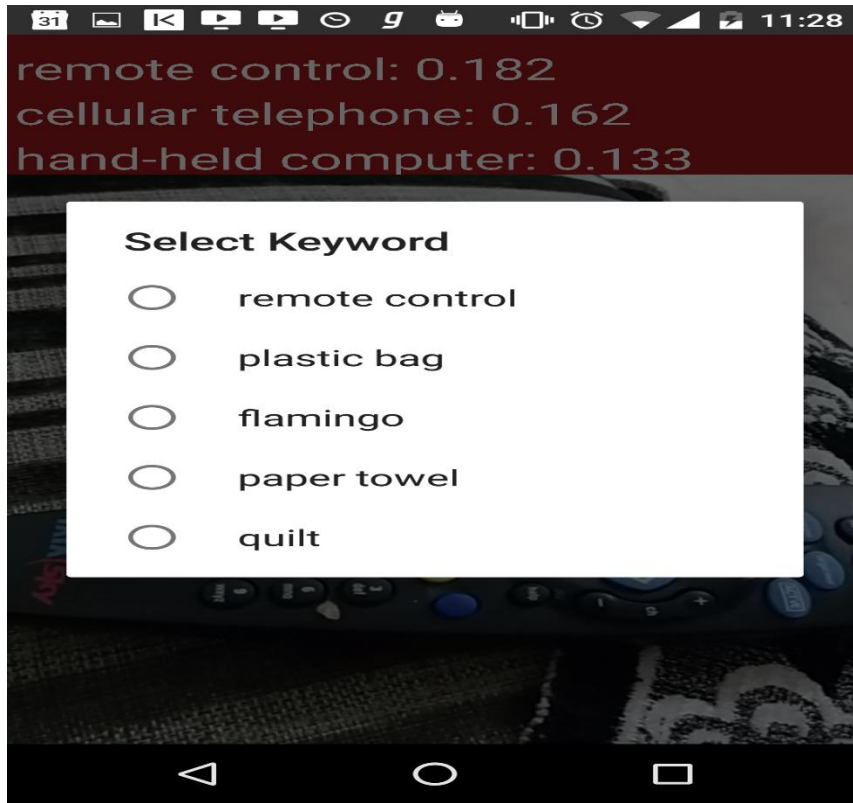
Screen Shot-3



Screen Shot-4



Screen Shot-5



Screen Shot-6



Screen Shot-7

#### 4. CONCLUSION:

In this paper, AR can provide interactive interfaces that enhance a process of learning and content editing in such a way, that current generation of students could learn faster, better and retain knowledge longer than before. AR is a perfect example of how users can remove the boundary between the two worlds and equip the real world with digital data. Furthermore, bionic interfaces for human body might additionally improve capabilities of humans beyond anything we know today. Such systems might also provide an in depth insight into user interactions, behavior patterns and learning processes as data could be collected and stored in cloud based services for further analysis.

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