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Voice Prescription using Augmented Reality

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Abstract **– For patients, correct drug information is important. However, patients always do not possess or comprehend professional drug facts. Many drug recognition systems offer keyword searches based on drug names, which may vary from product to product. A more robust form of search would enable users to describe the features of drugs based on their appearance. In this paper we propose a medicine voice prescriber based on Augmented Reality. This is able to reduce drug identification errors as well provide more accurate drug information .It is also able to retrieve the similar drugs, enabling theuser to identify the specific one.**

Keywords **– Augmented reality, Drug information, AR Camera, Vuforia Engine, Image Target.**

I. INTRODUCTION

Accidental medication mishaps occur frequently, making , medication safety an important issue. Hospitals currently provide a variety of drug counseling inorder to rectify these problems. However, many individuals also search for information ontheirown. Web searches for medicine information can be performed in two ways: (1) Database mapping and (2) Keyword search. Database mapping allows users to compare drug images with database information.However,this method is time consuming and inefficient for drug searches. Keyword searches performed by entering specific words, such as the drug name, color, shape, size, lettering and other features. However, since the search is user defined and provides only limited features for the system, errors in identifications are frequent. Several researchers have proposed drug identification systems using content-based image retrieval. It is a popular technology of image recognition which extracts physical features such as color or shape to describe an image of the object. These features are then used for drug recognition. However, it cannot efficiently identify circular drugs because they cannot produce representative features when drugs have the same shape and color. In this paper we propose a voice prescriber for medicines using Augmented Reality to track the image and real time object of the drug there by providing its description and google ratings, and render substitute products for the related drugs and their side effects. Hence, the system can be applied to clinics drug recognition for patients and pharmacists.

1. Problem Background

The Institute of Medicine's (IOM) first Quality Chasm report, To Err Is Human: Building a Safer Health System, stated that medication-related errors (a subset of medical error) were a significant cause of morbidity and mortality; they accounted "for one out ofever 131 outpatient deaths, and one out of 854 inpatient deaths". Medication errors were estimated to account for more than 7,000 deaths annually. Building on this work and previous IOM reports, the IOM put forth a report in 2007 on medication safety, Preventing Medication Errors. This report emphasized the importance of severely reducing medication errors, improving communication with patients, continually monitoring for errors, providing clinicians with decision-support and information tools, and improving and standardizing medication labeling and drug-related information.

2. Problem Statement

Voice prescriber that provides us with information about various drugs. In our application we use Augmented Reality to track the image and real time object of the drug there by providing its description and ratings. Render substitute products for the related drugs and their side effects.

3. Research Objective

The system should be able to enhance medical knowledge of the users, provide information and suggestions about medicines and their substitutes, bring the rare and latest technologies handy for the end users on a large scale and should provide an all in one application to tap into the digital health space with all the unique and necessary features at their fingertips.

4. Scope of Study

The scope of this project is to create an application to track the image or real time object of the drug and render appropriate description, ratings, retrieve similar drugs and their side effects using Augmented Reality.

II. LITERATURE REVIEW

Content Based Image Retrieval: The term content based image retrieval also known as query by image content, is

the application of computer vision techniques to the image retrieval problem of searching for digital images in large databases. The term is also used to describe the procedures necessary to retrieve images from a large collections, based on syntactic image features. It encompasses technologies, tools and algorithms from areas such as statistics, pattern recognition, signal processing, and compute vision. Though current systems typically use low level features such as textures, color and shape, system that use high level feature such as texture are common. Not every CBIR system is universal. Some systems are designed for a specific area, such as color matching and can be used to find parts within a medical database. Using this, we exploit different image processing techniques to extract the features of drugs to query a drug database.

Related of Drug Identification system: Many hospitals provide drug information databases for people to identify drugs and their functions.Such drug identification system may be divided into two types. The first is a list of drug names,where the user selects a similar drugs. The second system uses keyword search, including thename, shape,color,patternandotherfeatures.Thelatter system searches databases to find features of drugs that match the searchresults.

Zeno et al designed a drug identification system that combines IBM's QBIC (Query by image content) and the iMatch system. Zeno extracts the features and follows the format of MPEG-7.The features are entered into QBIC and iMatch to identify the specific drug. However Zeno's proposed method only identifies a small number of drugs, a fraction of the large and constantly expanding number of drugs used.

Hsieh et al proposed real drug image identification system. It uses the features of the color and texture to search for images in database. However, in this,many drugs have similar colors and shapes, meaning that the queried image is often not found.

Automatic Drug image identification system based on multiple image features and dynamic weights. It is divided into two phases, the learning phase and the recognition phase.

III. SALIENT FEATURES AND EXPERIMENTAL RESULTS

Our Voice prescriber is a blend of four modules AR Camera, Image Capturing Module, Tracking module, Rendering module. The captured image will track with some specialized software. The tracker calculates proper location and orientation of virtual overlay.

Afterwards, combines the original image and virtual image using the rendering module. Rendering module calculates the 'pose' and renders the final image of Virtual image or components to the display. The important component of this system is tracking module. It calculates the pose of the camera in real time. In this context the term "pose" designates the six degrees of freedom, namely the position and rotation of an object in 3D.By using this piece of information, the tracking module prepares a virtual element to be displayed in the realscene.

1. AR Camera

A real world live video serves as an input from the android all phone cameras to the Android all phone camera to the camera module. In Augmented Reality displaying the live feed from the android cell phone camera is the reality. For image capturing module the live video stream is given as an input.

2. Image Capturing Module

The live video feed from the camera of a mobile device is the input to image capturing module. Each frame in the video is analyzed by analyzing camera feed in the module. Binary images are generated by this module i.e. a digital image which has only two possible values for each pixel.

Black and white is the two columns used for a binary image.For binary images are provided as an input.

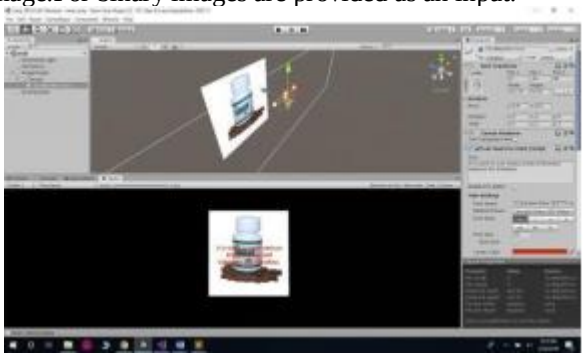

Fig.1. Image capturing module.

3. TrackingModule

The tracking module is the most important process of this project, as it calculates the relative pose of the camera in real time.In this context the term "pose" designates the six degrees of freedom, namely the position and rotation of an object in 3D. By using this piece of information, the tracking module prepares a virtual element to be displayed in the realscene.

Fig.2. Tracking module.

4. RenderingModule

It consists of 2 inputs. The calculating pose from the tracking module is the first and second is the virtual object to be augmented. The original image and the virtual components are combined using calculated pose in

the rendering module and augmented image is rendered on the display screen of the mobile device.

Fig.3.Rendering module.

IV. CONCLUSION

In this paper, we have a proposed a voice based medicine prescriber using Augmented Reality. Our method for drug identification was feasible and identification was effective. However, there were still system identification errors with drugs of similar size,color,and texture it could able to resolve all those things. Any digital devices like mobile phones possibly access and operate the system. It further provides functionalities such as drug alternatives, ratings and side effects to enhance the sense of value of the drug identification system.

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