AR Dictionary: Dynamic Annotation for English Words in Printed Documents

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ABSTRACT

In this demonstration, an AR(Augmented Reality) dictionary system using a HMD is proposed. The goal of this system is to improve usability for looking up meaning of words. In this paper, we present the system configuration of AR dictionary and its effectiveness.

Keywords: Augmented Reality, Head Mounted Display, Dictionaries

Index Terms: H.5.1 [Information Interfaces and presentation]: Multimedia Information Systems—Artificial, augmented and virtual realities, Evaluation/methodology; H.5.2 [Information Interfaces and presentation]: User Interfaces—Screen design, Input devices and strategies;

1 INTRODUCTION

When we consider using AR(Augmented Reality)to support user's daily activities, it is necessary to support users dynamically as situation demands. However it is difficult to create and associate support information such as annotations with all surrounding environment and objects in advance. This necessitates dynamically creating and associating support information in response to user's need [1]. Our goal is to evaluate the effectiveness of such AR application.

One example can be a user reading a research paper who wish to look up the meaning of some English words. In this case, electronic dictionaries and Internet dictionaries have widely been used. However users have to frequently shift their attention from the paper to the display of dictionary devices. Clearly, this is not desirable from the viewpoint of usability. We implemented an AR dictionary system to solve this problem.
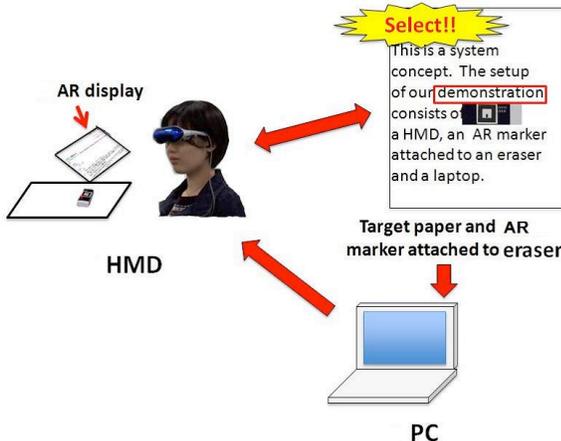

Figure 1: system concept

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2 SETUP

The concept of the system is illustrated in figure1. The setup of our demonstration consists of three components; a HMD(Head Mounted Display) , an AR marker attached to an eraser and a laptop. The user wearing the HMD can put the eraser near a word on the paper to look up for its meaning. To detect the location of the eraser, ARToolKit is used [3]. The word is segmented and recognized by Tesseract[2], an open source OCR engine. The word is searched from the Internet dictionary and shown in the AR display.

The AR display is shown near the eraser which allows the user to look up the meaning of English words intuitively without shifting their attention from the paper to the display of dictionary devices. When using electronic dictionaries or internet dictionary devices, the user may need to type with both hands. If he wishes to write down notes on a piece of paper, he has to switch from typing to writing. In the proposed system, using simple objects such as erasers, the seach term is recognized automatically. Therefore, our system can be used with only one hand. In addition, AR dictionary can also show two or more AR displays simultaneously. These features are favorable for improving the effectiveness of user's look up activity.

Figure 2 shows a demo screenshot.

Figure 2: demo screenshot

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