



Survey on Virtual Keyboard using Rough Draft

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ABSTRACT

Now a Day as technology is getting advanced new systems are introduced that looks after the users comfort. In recent years ago hard switches were used as keys and due to the compact nature of Traditional QWERTY keyboards offers very poor in the terms of enhancements. Now-a-Day soft touch keypads are becoming much popular in the market .These keypads gives a glamorous and attractive look. Currently keyboards are static and if they are made dynamic and adaptable then their usability and interactivity would be increased. There are various on-screen virtual keyboards are available but it is difficult to fit the full sized keyboard on the screen as it creates obstruction to see the documents being typed. As the virtual keyboard has no physical appearance, the form of virtual keyboard provides solutions using specialized devices such as 3D cameras Because of this the practical implementation of such keyboards is not feasible. The virtual keyboard that we propose uses a web camera, with no additional hardware with it. Thus we can say that as the technology advances it always has more benefits and is more user-friendly than the previous one.

Keywords- Virtual Keyboard, Segmentation, Thresholding, pattern matching, pattern recognition

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I. INTRODUCTION

The keyboard used for the personal computer is developed from keyboard which is used in typewriters. The keyboards layout has remained same but to detect the key-press it makes uses of breaking and making the electric contact. As this concept has disadvantage that a large amount of physical space is needed to accommodate the keyboard as it becomes unsuitable for the applications such as mobile phones because of the limitation of the screen size.To overcome this limitation the input mechanism is integrated in the screen itself known as touchscreens were developed. But due to the small size of buttons on the touchscreen, typing on these touchscreen becomes inconvenient due to its small size for most users. Also some security issues had risen because of the touchscreens typing keypads integrated in the computer software.For the above problems a virtual keyboard had been developed which consists of a camera

and a projector. The projector projects the keyboard on the flat surface with the help of lasers. As this concept as some disadvantages and limitations as projected keyboards should not be used in Bright rooms, the device is very costly because of the projector used, typing in thin air requires a little practice, and there may be eye's and skin problem due to the continuous interaction of the fingers and eye's projected due to projector rays.To solve these problems we decided to build a keyboard which will be drawn on blank paper. A camera will be there to capture live feed of fingers typing on blank paper with keyboard drawn on it. The virtual keyboard should be accessible and functioning. The keyboard must give input to computer. With the help of camera image of keyboard will be fetched. The typing will be captured by camera, as we type on cardboard simply drawn on paper. Camera will capture finger movement while typing. So basically this is giving the virtual

keyboard. The concept of image processing is used to process the images obtained from camera.

II. RELATED WORK

There are various forms of virtual keyboards implemented based on 3-D optical ranging and CCD Cameras are most significant as primarily based on image processing. The elaborate research done by Jun Hu, Guolin Li, Xiang Xie, ZhongLv, and Zhihua Wang, highlights virtual keyboard using touch interaction on flat surface with the keyboard projected by projector[2]. They build a model that explores the finger influence on the button distortion using mono-camera. On the projected keyboard touch detection is a very big and a crucial issue. So many technologies are developed to avoid these issues[1]. To detect touch action on the skin they used a wearable, bio-acoustic sensing array built into that, and then they apply an accelerometer to detect the acceleration generated by the fingers' click. These methods require some additional hardware and they are high in cost. They generally used two cameras one for the detecting finger movements and another for the calculation of depth[7]. Day by day as technology get advanced that so many new systems are get developed. So many people worked on the virtual keyboard.

III. EXISTING SYSTEM

The existing system consists of a camera connected to the computer, a projector that projects the keyboard on the flat surface using laser rays. The projected keyboard is already stored and a constant video feed is given by the camera to the application and then using various images processing tools the keyword is detected and displayed on the monitor.

Their Components:

1. Camera: Camera is used to capture the movements of the fingers of the user on the keyboard.
2. Projector: A Projector is used to project the laser keyboard on the flat surface
3. Software: MATLAB R2010a has been installed on the computer on which we tested the implementation.

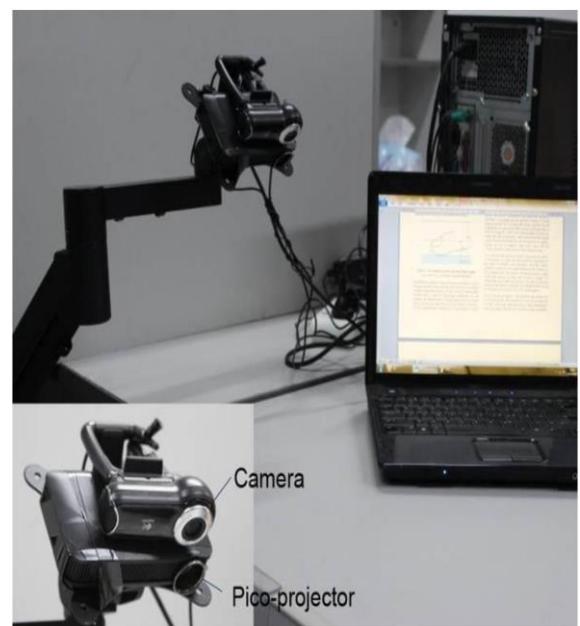


Fig.1 System Architecture

IV. PROPOSED SYSTEM

The proposed systems consist of a camera and a keyboard drawn on blank paper. Any image of keyboard drawn on surface can be a reference and at the start of the application photo of the keyboard is stored in memory as a reference image. These continuous frames of images i.e. video are feeded to the application. Frame extraction is applied to this video to get reference images to detect the input by the user. After this this reference image would be segmented using thresholding technique. On running this system we would be able to detect any change in this reference image by comparing it with the original image which is stored with the start of the application. After detection of the segment where the change occurs, a virtual key press would be initiated. This detected key will be sent to the application running in background; this running application will display the key on the monitor.

Our application working steps:

1. After start of the application the original image of the keyboard drawn on the blank paper is captured and stored.
2. When user wants to type he gradually moves his fingers on the keyboard, video of these moving fingers is captured using the camera i.e. constant video
3. From these video the frames are extracted at continuously at some interval of time, by using thresholding technique the captured image is segmented and also the gray scale image is converted into binary image.
4. Then image processing is applied for the further processing. Here the pattern matching and pattern

recognition operations are applied.

5. After applying the image processing the keyword is detected and it is displayed on the monitor.

V.CONCLUSION

We haddone survey on Virtual Keyboard. For this we have referred several papers and proposed our system that makes use of keyboard drawn on paper instead of laser projector.

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