VIRTUAL KEYBOARD PROJECTION

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Abstract - There are different kinds of input of computers but here we prefer a recent input method of computers. The preferred method is called Virtual Keyboard. Input to small devices are becoming a progressively salient factor in the development for the ever-more secure embedded market. We discuss various Virtual Keyboard and its flexibility and applications. Speech input promises to become a reasonable alternative to insignificant keypads, yet its limited authenticity, robustness, and flexibleness render it inappropriate for certain tasks and/or environments.

Keywords - Communication**,** Sensors**,** Input Method**,** Virtual keyboard**,** Template projection**.**

I. INTRODUCTION

Virtual keyboards are commonly used as an on-screen input method in devices with no physical keyboard, where there is no room for one, such as a pocket computer, personal digital assistant (PDA), tablet computer or touch screen-equipped mobile phone**.**

A virtual keyboard is a software component that allows a user to enter characters. A virtual keyboard can usually be operated with multiple input devices, which may include a touch screen, an actual computer keyboard and a computer mouse in space and the user could type by moving fingers through the air. In one technology, the keyboard is projected optically on a flat surface and, as the user touches the image of a key, the optical device detects the stroke and sends it to the computer. In another technology, the keyboard is projected on an area and selected keys are transmitted as wireless signals using the short-range Bluetooth technology. Theoretically, with either approach, the keyboard could even be projected.

A virtual keyboard is where a full-size image of a QWERTY keyboard is projected onto any surface. Touching the image of a key generates a unique electronic signal corresponding to a key's image. Using a virtual keyboard eliminates the chance of breakage and infection transfer.

II. SYSTEM ARCHITECTURE

This figure shows the physical set up of the system

- The 3D range camera is placed several cms over the input surface, with a well defined angle facing the working area.
- The size of the working area, limited by the spatial resolution of the camera, is 15 cm 25 cm, which is comparable to a full size laptop-computer keyboard.
- The display projector is mounted on the camera ,facing the same area, which would generate the visual feedback for the keyboard and input information.
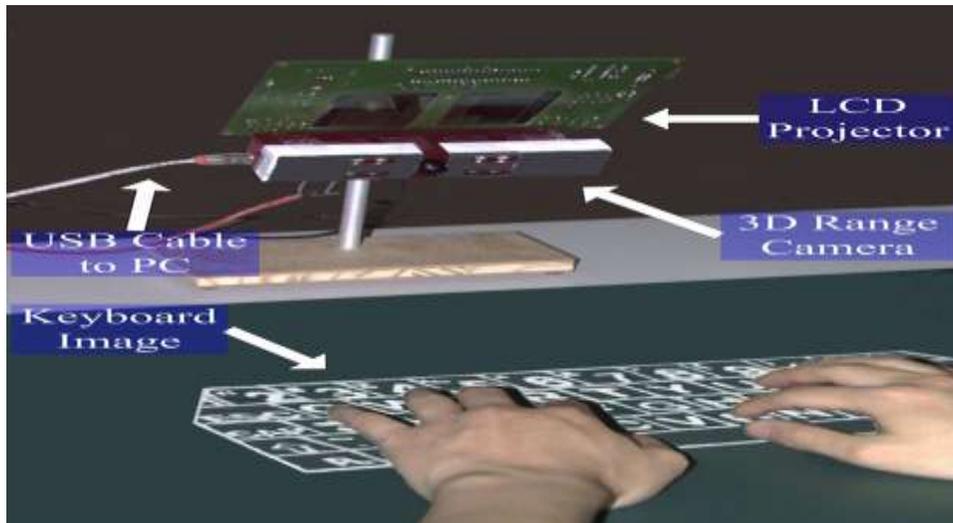
Virtual- keyboard demonstration-system setup

III. WORKING OF VIRTUAL KEYBOARD
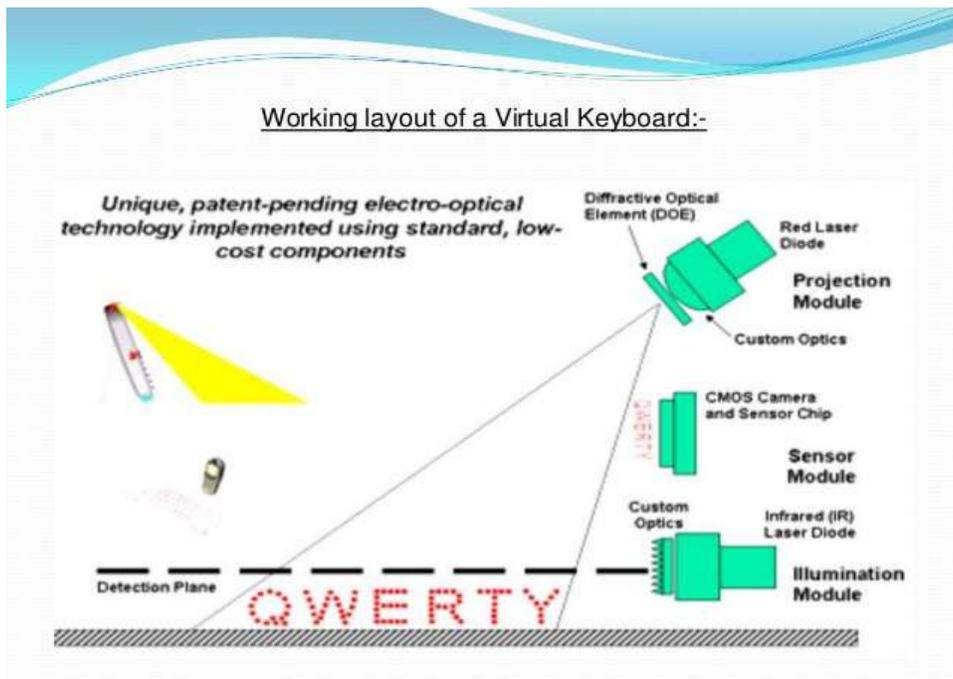
The projection is realized in main 4 steps:-

- **Template projection :-**
  A template produced by a specially designed and highly efficient projection element with a red diode laser is projected onto the adjacent interface surface. The template is not however involved in the detection process and it is only used as a reference for the user.

2. Reference plane illuminations:-

An infra-red plane of light is generated on the interface surface. The plane is however situated just above and parallel to the surface. The light is invisible to the user and hovers a few millimetres above the surface.

IV. APPLICATIONS

i. It is good to be used by Business men/ women, Suppliers/ Invoice keepers, Students/ teachers, Tourists/ trekkers, High-tech employees, Lawyers/ accountants, Architects, Land surveyors, Field engineers.
ii. Used with smart phones, PDAs, email, word processing and spreadsheet tasks.
iii. Operation theatres.
iv. Most systems can function as a virtual mouse or even as a virtual piano.

V. ADVANTAGES

1. Portability
2. Accuracy
3. Speed of text entry
4. Lack of need for flat or large typing surface
5. Ability to minimize the risk for repetitive strain injuries
6. No driver software necessary ,it can be used as a plug and play device

VI. DISADVANTAGE

1. It is very costly.
2. The room in which the virtual keyboard is used should not be very bright so that the keyboard is properly visible.
3. Virtual keyboard is hard to get used to. Since it involves typing in thin air, it requires a little practice. Only people who are good at typing can use virtual keyboard efficiently.

VII. CONCLUSIONS

We first gave an overview of the technology. We then had a closer look at how the technology actually works. This was followed by application of virtual keyboard projection technology and its applications, advantages and   disadvantages.

Our conclusions are that while the keyboard is often regarded as an unique method that is unsuitable to modern computing devices, a number of characteristics are inherent in the way it that make it preferable over alternative methods. Input with keyboards is and will be an important user interface modality for computers for decades to come.

VIII. ACKNOWLEDGEMENT

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