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Drag–And-Type: A Virtual Keyboard Resilient To Spyware in Smart Phones

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ABSTRACT:

Small touch screen are widely used in consumer electronics, such as smart phones and mobile electronic devices. However, typing on the small touch screen is still worth studying. In fact, smart phone users are experiencing difficulties and also many errors in typing alphanumeric keys with their thumbs because a small virtual keyboard even with the reduced set of touchable keys can only provide tiny size keys to the users. This paper studies a new style of typing method called Drag and Type, which leverages the dragging action instead of direct tapping on the touch screen to ease more accurate typing on the small virtual keyboard. Although the typing speed is controversial, the consumers can choose this method when an accurate typing is more required, for example, for a password entry that is quite more sensitive to erroneous key inputs. In that sense, the proposed method is further explored to the extension called Secure Drag-and-Type for securing the password entry against shoulder-surfing and spyware attacks under the Drag and – Type paradigm. In the user study, it was found that the proposed method could be used for secure and accurate password entry on the small touch screen regarding the security sensitive consumer electronics applications.

Index Terms ***—Raspberry Pi processor, virtual keyboard, Shoulder-surfing, spyware, display unit.***

I. INTRODUCTION:

A smart phone is now becoming a part of electronics Consumer’s lives and turns out to be one of the most popularly used consumer electronic devices. Its small flat touch screen enables those consumers to navigate various kinds of services and applications very easily, promptly, and intuitively with their Fingers. The small touch screen is also changing the way of typing alphanumeric characters on those devices. Without a physical Keyboard, today’s smart phones popularly present virtual Keyboards, aka software keyboards based on the high-resolution of small touch screens. Here we are using a virtual keyboard and we are dragging the characters on the keyboard in the blank space area where we want to type some text. So we have to put our finger on the character and drag the character to text area. The only requirement is that the selection of the characters we have to do properly. The smart phone users are frequently experiencing difficulties and also many errors in typing alphanumeric keys with their thick thumbs because a small virtual keyboard even with the reduced set of touchable keys can only provide tiny size keys to the users [1], [2]. Although the higher resolution of touch screens can facilitate much smaller keys for constructing a full size keyboard layout, users may prefer a larger key so as to type characters with thumbs more easily. The first method presumes a full layout of standard QWERTY keyboard in small size and makes a user navigate the virtual keyboard by dragging one finger, e.g., the left thumb, and type a highlighted (selected) character by tapping on any blank area with another finger, e.g., the right thumb. It illustrates a prototype layout of Drag-and-Tap keyboard. The small red dot located among the keys, y, u, and h, is used to navigate and select a target key while the larger grey circle below the keyboard indicates an actual place for dragging. Deep grey keys are used for rendering more functions onto the keyboard, such as tab, language, shift, backspace, space, and enter. It is a snapshot of the Drag-and-Tap method in actual use.

II. SYSTEM ARCHITECTURE:

2.1 BLOCK DIAGRAM:

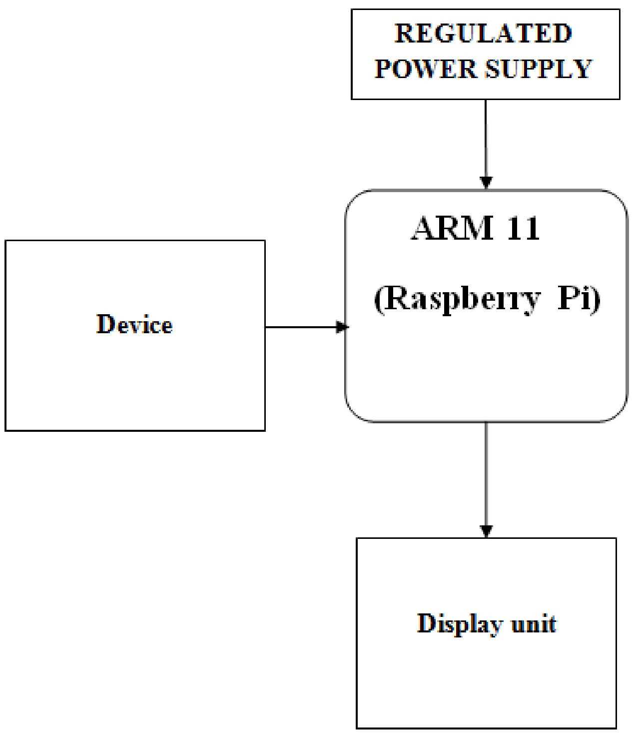

Figure-1: block diagram

2.2. EXISTING METHOD:

The existing keyboards, used keys based keyboard for typing on the computer. These keyboards are working on the mechanical push principle. But for the small devices like mobile phones and tablets it is impossible to carry big keyboard with them. The touch screen based keyboard available in that devices are very inconvenient to write because the size of people finger is big and the size of the keys on the touch screen is small. So typing work on the small devices is not convenient and on computer our fingers get pain after doing long time typing work because of mechanical vibration of the keys.

2.3 PROPOSED METHOD:

In the proposed method we overcome the drawback present in existing system by using touch and drag method. Our system is designed by using ARM 32-bit micro controller which supports different features and algorithms for the development of automotive systems. Here we are using a virtual keyboard and we are dragging the characters on the keyboard in the blank space area where we want to type some text. So we have to put our finger on the character and drag the character to text area. The only requirement is that the selection of the characters we have to do properly.

2.4 RASPBERRY PI PROCESSOR:

Figure-2: Raspberry Pi processor

In the proposed ALPR system we used the Raspberry Pi is a credit-card sized single board computer developed in the UK by the Raspberry Pi foundation. The Raspberry Pi has Broadcom BCM2836 system on chip (SoC), which includes an ARM1176JZF-S 700 MHz processor. Video Core IV GPU, and was originally with 256 megabytes of RAM, later upgraded to 512 MB. It does not include a built in hard disk or solid state drive. but uses an SD Card for booting and long term storage. A better-quality picture can be obtained using the HDMI (High Definition Multimedia Interface) connector, the only port found on the bottom

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of the Pi. Unlike the analogue composite connection, the HDMI port provides a high-speed digital connection for pixel-perfect pictures on both computer monitors and high-definition TV sets. Using the HDMI port, a Pi can display images at the Full HD 1920x1080 resolution of most modern HDTV sets.

III. SOFTWARE TOOLS:

3.1. QT EMBEDDED FRAME WORK:

QT is a cross-platform application framework that is widely used for developing application software with a graphical user interface (GUI) (in which cases QT is classified as a*widget toolkit*), and also used for developing non-GUI programs such ascommand-line tools and consoles for servers. QT uses standard C++ but makes extensive use of a special code generator (called the *Meta Object Compiler*, or *moc*) together with several macros to enrich the language. QT can also be used in several other programming languages via language bindings. It runs on the major desktop platforms and some of the mobile platforms.

It has extensive internationalization support. Non-GUI features include SQL database access, XML parsing; thread management, network support, and a unified cross-platform application programming interface (API) for file handling.

3.2 GCC COMPILER:

The original GNU C Compiler (GCC) is developed by Richard Stallman, the founder of the GNU Project. Richard Stallman founded the GNU project in 1984 to create a complete Unix-like operating system as free software, to promote freedom and cooperation among computer users and programmers. GCC, formerly for "GNU C Compiler", has grown over times to support many languages such as C++, Objective-C, Java, Fortran and Ada. It is now referred to as "GNU Compiler Collection". The mother site for GCC is http://gcc.gnu.org/. GCC is a key component of "GNU Toolchain", for developing applications, as well as operating systems.

IV. RESULTS:

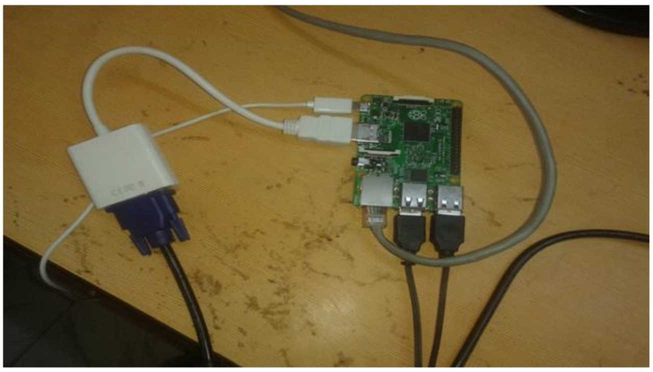

Figure-3: Processor with HDMI

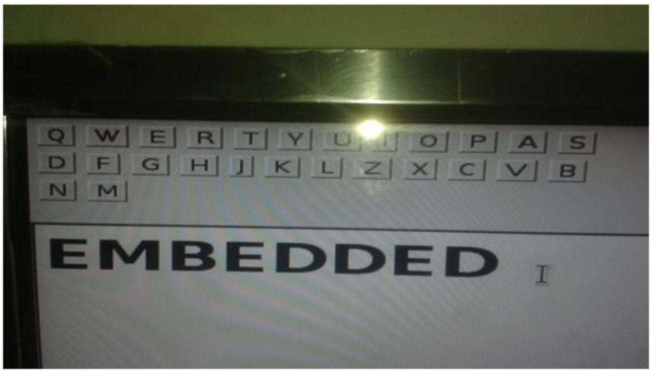

Figure-4: Output of project

Figure-5: Drag and Type

V. CONCLUSION

In this paper, the new Drag-and-Type method (Drag-and-Tap and Drag-and-Drop) and its extension called Secure DnT were proposed. The Drag-and-Type was a novel typing method based on the dragging actions on a small flat touch screen. The prominent feature of the Drag-and-Type method was accuracy. The consumers are able to type more accurately but more slowly on the full-size virtual keyboards than on the existing virtual keyboard.

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