

Un-Mouse

The "Death" of the Computer Mouse

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Abstract—

Even by coming so far in developing technologies using computer, The physical structure of mouse, one of the main component used to interact with computer, has remain unchanged, we have become extremely efficient in handling conventional mouse. Even though there are many alternatives come forward by the development in Image Processing, Touch Screen Technology, the two-button computer mouse seems to be irreplaceable. This report represents an ultimate way to beat conventional mouse. We all must be freakishly addictive to newly developed android smart phones. These phones carry as much computational power as used in NASA circa 1969. Why don't we put this great power to some good use, while thinking about that Our Talented group came up with idea of using your phone as a replacement for conventional mouse.

Keywords—Mouse, Image Processing, Touch-Screen Technologies, Android.

I. INTRODUCTION

“The computer mouse may be an endangered species.” The statement above is about to be coming True. The “Un-Mouse” completely removes the need of having a physical mouse, but still provides intuitive interaction using smart phone. We all are using Laptops, Often troubled with the touch pad. But by using USB mouse we are losing its function as a portable device. Also we often get irritated, as the mouse pointer is not moving as it should due to improper mouse pad or some internal hardware problem. But now, all your troublesome problems are about to get solved. Basically “Un-Mouse” is nothing but Combination of Android based application and a Java based algorithm which is to be run on a Computer for which you want your mobile to be acting as a mouse.

A. Android based Application

Android powers hundreds of millions of mobile devices in more than 190 countries around the world. It's the largest installed base of any mobile platform and growing fast—every day another million users power up their Android devices for the first time and start looking for apps, games, and other digital content.

So the “Un-Mouse” android application will have a layout of physical mouse containing two buttons for left and right click, and another two buttons for up-scrolling and down scrolling. What this application will do is, it will track a movement of mobile phone according to its acceleration in 3-D space, and

will inform the computer about mobile's position. Rest is the computing part.

B. Decoding mobile motion using Java based algorithm

From the information we have obtained by the android application, the algorithm developed will extract the relative position of mouse pointer as well as the events occurring while mobile is in motion such as Left click, Scroll etc.

As we improve our algorithms, an extensive library of gestures could be implemented in addition to mouse movement and mouse clicks. Typical multi touch gestures, such as zooming in and out, as well as novel gestures, such as balling one's fist are all possible.

II. WALKTHROUGH TO “UN-MOUSE”



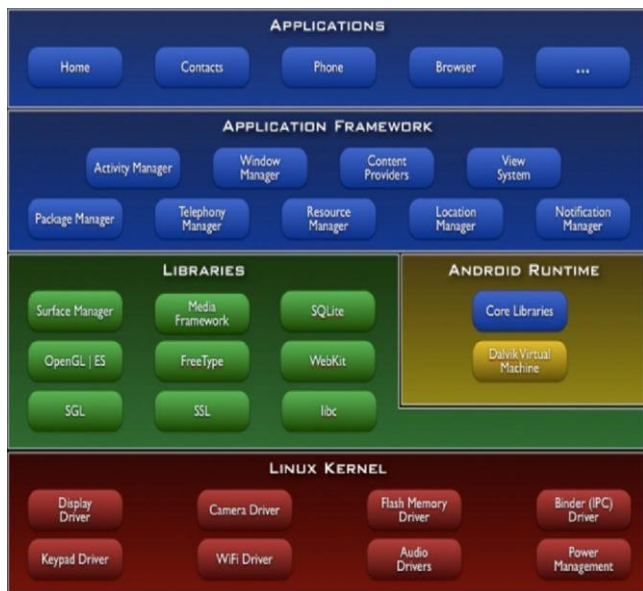
The GUI of application will look something like this.

Where there are four buttons for basic mouse operations. Whole device is to be set up in motion in order to have movement of mouse pointer.

A. Android development part

Android is A Linux based Operating System designed primarily for touch screen mobile devices. In order to develop an android application, you should have Android SDK, Latest

ADT plugins (if you are using Eclipse IDE). An Android supporting phone will have a architecture as shown below



The above showed layers interact with each other through application, in this way Hardware Synchronization is done.

1) Android features:

Application framework enabling reuse and replacement of components.

- 1) Dalvik Virtual Machine optimized for devices.
- 2) Optimized graphics powered by a custom 2D graphics library; 3D graphics based on the OpenGL ES 1.0 specification
- 3) SQLite for structured data storage
- 4) Bluetooth, 3G, and Wi-Fi, Wi-Fi Direct, Wi-Fi hotspot (Hardware dependent)
- 5) Camera, GPS, compass, and accelerometer

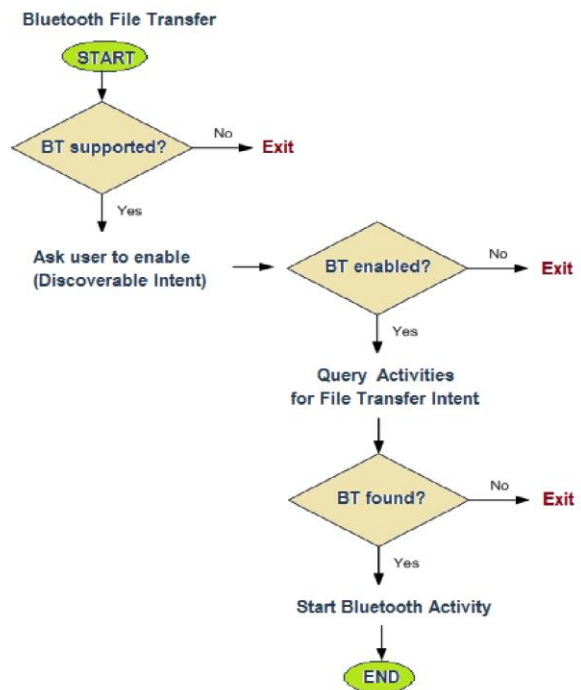
The above features of Android Phones make it ideal for designing “Un-Mouse”.

2) Incorporating above features:

Among available Hardware features, we will be using Accelerometer for tracking motion based upon acceleration and Bluetooth in order to communicate with PC through dedicated connection at free of cost.

B. Communication with PC

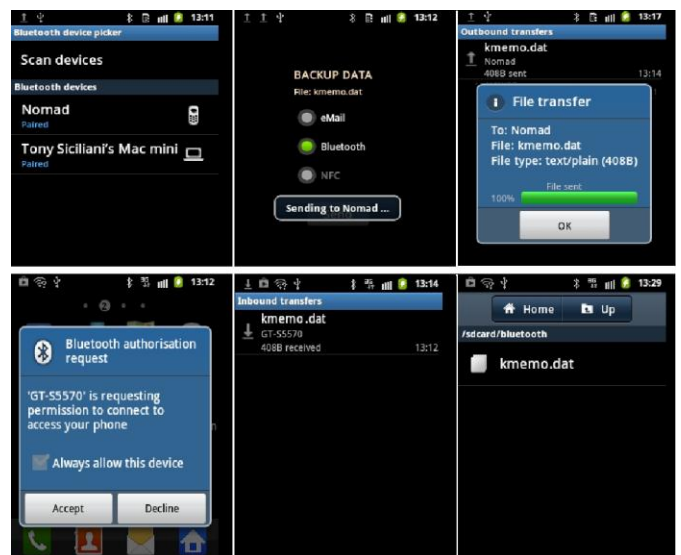
There are many ways to communicate with PC like using zig-bee, Bluetooth, Wi-Fi, Internet. We will be using Bluetooth as a way of communication as it is free of cost and is less likely to be affected by noise. Now the question remains, is what to communicate. Bluetooth supports many types of file handling. We will be using text file to communicate, as text file is of very less size and will be a faster way to communicate in order to keep up with high speed interaction of user. Text file will contain information about location of mouse pointer as well as various mouse on click events if occurred.



Here’s what we mean by a way of communication.

C. Computation within PC

We are using MATLAB as a development platform for decoding the information contained in the text file, MATLAB supports JAVA (as computer interaction are handled in JAVA language) and also supports Text File handling operation such as Opening, Closing, Deleting, Reading, Writing. Thus by developing the proper algorithm, we can achieve the intuitive interaction as we obtain with conventional mouse. PC is also communicating with device to acknowledge reception.



Note that, once the receiver accepts the connection. the received file (*kmemo.dat*) is saved inside the BT folder on the SD card. All the lower-level data transfer has been handled by the Android OS.

D. Abbreviations and Acronyms

- 1) MATLAB (**M**atrix **L**aboratory) is a numerical computing Environment and a fourth-generation programming language.
- 2) SDK: Software Development Kit
- 3) IDE: Integrated Development Environment
- 4) ADT: Android Development Tools
- 5) SD: Secure Digital (**SD**) is a non-volatile memory card format developed by Panasonic, SanDisk, and Toshiba for use in portable devices

III. FEATURES

2. Portability of laptop devices is maintained, while for desktops available workspace is optimized to give great results.
3. The device will last longer as the battery consumption is minimized by maintaining the synch between activity cycles.
4. Software cost is low.
5. We can have entire Bluetooth range as active area for interaction.
6. The idea can be extended to substitute Keyboard, Game Controllers etc.

IV. APPLICATION

The “Un-Mouse” is designed for substituting the conventional mouse. The idea can be extended in order to substitute Keyboard, Game Controllers also. By doing that we are saving the cost of such peripherals, as we are using mandatory devices which we use in our day 2 day life such as Android Phones. Another advantage is that the whole bulky structure of Computer will get replaced by sole monitor, which will save plenty of space, which will be certainly beneficial for people who run cyber café. The amount of people that can access internet simultaneously will increase as there will be more number of PCs in same space. Another advantage is that accessing mouse, Keyboard using phone will be pretty relaxing as compared to conventional way, As we can just lay back on our seat in the office to interact, or you can like any Facebook profile pic while sleeping on the bed too. The idea seems much cooler when it comes to younger generation, it will attract many youngsters causing app’s revenue to increase. Thus idea also seems very beneficial financially for the seller also.

SUMMARY

This paper reviews the product “Un-Mouse” which is designed to replace conventional mouse to cost and give users the cool way of interacting with PC. The product uses available hardware on android device like Accelerometer, Bluetooth to encode the information such as mouse pointer location and mouse click/scroll events and sends it to PC. This

by using Proper algorithm will decode the information and gives results as if we were using a physical mouse.

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