

Multiple mouse dxball game

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Abstract— Nowadays software technologies are improving very quickly and create a new structure each passing year. One of these improving structures is multitouch applications. Multitouch platforms offer new, practical and exciting ways of interacting with computers, which make facilitates human life. In this field, many applications are being developed like natural application, graphical illustrations or games. In the past time, single-input devices have used for same applications. Traditional input devices, such as the mouse, keyboard or other known input devices only allow to input from one user at a time. But, multitouch gestures allow for multiple inputs and often provide physical and intuitive interactions for users. Also, multitouch surfaces allow more than one person to cooperate on the same screen. This convenience enables people to work together and communicate. Furthermore multitouch applications have the potential for offering new games or other forms. Multitouch two-handed gestures useful for rotate, move, release for amusement applications. Multiple mouse dxball game is written with C# programming languages and WPF technologies.

Keywords— *Multitouch pad, multitouch surface, input device, touch screen, multiple mice.*

I. INTRODUCTION

Multi-touch refers a touch sensing surface's (track pad or touchscreen) ability to recognize the presence of two or more points of contact with the surface. This plural-point awareness is often used to implement advanced functionality such as, pinch to zoom or activating predefined programs [1]. Multitouch surfaces and software has emerged in conjunction with Windows 7 and it is presented to be developed with .NET 4.0. Windows 7 gives users the ability to manage applications with the touch of their fingers, using no intermediate device. This expands the stylus-based capabilities of tablet PCs. Unlike other devices, this new capability lets multiple input events at the same time from different locations, and it enables same cases such as, managing applications with more than one finger or with multiple simultaneous users.

In graphical applications, one of the interactive ways to capture user input is use of the touch screen. This touch screen pioneer in IT sector with multitouch technology. Nevertheless multitouch programming has increased. Programming for multitouch is much like any other form of coding, however there are certain

protocols, methods, and standards in the multitouch world of programming [2]. Many companies have developed software with this way.

II. REVIEW OF MULTI-TOUCH FRAMEWORKS

In Windows 7, we have enriched the Windows experience with touch, making touch a first-class citizen as another way to interact with your PC alongside the mouse and keyboard. In recent years, we have witnessed a wide range of multitouch devices that have generated an extremely positive user experience. Therefore, it is only natural for Windows to introduce such multitouch support in Windows 7 as a core capability [3]. While normally multi-touch is best performed on touch screen that recognizes multiple simultaneous touch points, the touchpad on laptop and notebook computer does potentially able to be used for multitouch gesture too [4]. For multitouch, there is an input layer in order to correctly configure it. This is MT Windows 7's basic architecture:

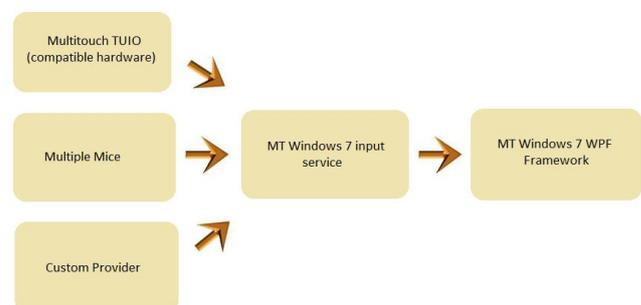


Figure 1: Multi-touch frameworks.

Multitouch TUIO

TUIO is an open framework that defines a common protocol and API for tangible multitouch surfaces. The TUIO protocol allows the transmission of an abstract description of interactive surfaces, including touch events and tangible object states. This protocol encodes control data from a tracker application and sends it to any client application that is capable of decoding the protocol.

There exists a growing number of TUIO enabled tracker applications and TUIO client libraries for various programming environments, as well as applications that support the protocol. This combination of TUIO trackers, protocol and client implementations allow the rapid development of table based tangible multitouch interfaces. TUIO has been mainly designed as an abstraction for interactive

surfaces, but also has been used in many other related application areas. Technically TUIO is based on Open Sound Control - an emerging standard for interactive environments not only limited to musical instrument control - and can be therefore easily implemented on any platform that supports OSC [5].

TUIO has same library like touchlib for multitouch surface. Touchlib is library for creating multi-touch interaction surfaces. It handles tracking blobs of infrared light for you and sends your programs multitouch events, such as 'finger down', 'finger moved', and 'finger released'. It currently works only under windows but efforts are being made to port it to other platforms [6].

Multiple mice

Multi-Touch Windows 7 is a user input management layer that handles input from various devices (touchlib, multiple mice, TUIO etc.). We choose to use multiple mice in our project. For making multiple cursors, some operations are done such as, set up driver developed by Microsoft. After setup in device manager, pen and touch feature must be active. The cursor is no longer available after that. But as you have two mouse devices, you can move those "red" touch pointers by using mouse. Each "red" touch pointer represents each USB mouse that you connected to computer. So that application can be developed with this way.

Programming with multi-touch is also used WPF. Upon being developed by Microsoft, the Windows Presentation Foundation (or WPF) is a computer-software graphical subsystem for rendering user interfaces in Windows-based applications [7]. WPF provides a high degree of visual interface for users in Microsoft Windows programs. Therefore, the future could be called programming technology. When we create a WPF project, we add references to Windows7.Multitouch.WPF.dll and to Windows7.Multitouch.dll. That is provided to use multitouch feature of coming with windows 7.

Multi-touch applications

On surfaces of without multitouch feature or monitors, multitouch applications can be developed. We are able to provide it with changing Windows 7's pen and touch feature developed by Microsoft. Multitouch operations can be made using Windows APIs on the Windows 7 operating system. With this API, stylus events or touch events can be run. So that multitouch applications can be performed with more than one finger.

On a touch surfaces tabletop games usually play with more than one finger of a player or more players. This programming makes computer more capable and useful. In our multiple dx-ball game, there are two groups of four people and the sticks represent groups of each player. This was inspired by "dx-ball". Each group has the right to play consecutively with 3 times. Which group drops the ball less, that group wins the game.

We use touch device class while creating this game. Touch device developed with WPF 4.0 [8]. Touch device class include hardware information that performs the touch events.

Touch' usually used events on multitouch application:

Touch Down: This is a using event in case of contract with surface.

Touch Up: This is a using event in contract removal with surface.

Touch Move: This is a triggered event in constantly on the move on surface.

Touch Enter: This is a triggered event when entered into boundary surface.

•Touch Leave: This is a triggered event when separated from the surface.

We prefer to use Touch Move for our Multitouch game.

Multiple dxball game

Top table games, certainly competitive ones, on a touch surface required that the system distinguishes one participant's action from another. Here we illustrate a set of simple games that demonstrate some of the interaction possibilities enabled by our toolkit [9]. Multiple Dxball is a game in which drag sticks left or right. The aim is the stroke the ball without dropping the ball to many. The game is played in groups and each group includes four people. There are number of strokes and play a number of rights. In the beginning the ball selects a direction randomly. After each groups playing three times, a winner is determined by the score.

While we are creating the project, we use touch move events for performing the drag. We make it this code:

```
public MainWindow()  
{  
    TouchMove +=  
    new EventHandler<TouchEventArgs>(MainWindow_TouchMove);  
}  
void MainWindow_TouchMove(object sender,  
TouchEventArgs e)  
{  
    //ourcodes  
}
```

After creating touch move event, we determined that could go maximum the left and right limits for do not exceed the limits.



Figure 2: Button's right and left limits

We used variable for determine which stick is active. Variable "true" in which button, this button collision with the ball check.

```
Canvas.SetTop(ball, Canvas.GetTop(ball) - 1); //for negative direction
if (active == true)
{
Counter_point= Convert.ToInt32(label3.Content) + 1;
label3.Content = counter_point;
}
else
{
Counter_point = Convert.ToInt32(label4.Content) + 1;
label4.Content = counter_point;
}
```

After the ball hit the button, it backs the opposite direction of the former. While stick and ball are at the same time height if the stick is other place from the ball, the ball falls and the game start again.

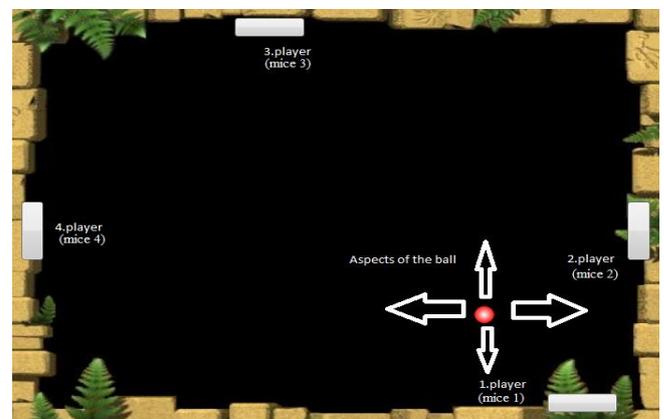
```
Canvas.SetLeft(top, Canvas.GetLeft(top) + 1); //forpositivedirection
Forscortable:
if (missing == 3)
{
missing = 0;
game = game + 1;
if (active == true)
{
listBox1.Items.Add("X");
active = false;
counter_point = 0;
}
}
else
{
listBox2.Items.Add("X");
active = true;
counter_point = 0;
}
total_missing = total_missing + 1;
if (total_missing != 6)
MessageBox.Show("Sequencepassedtoothergroup.");
}
if (total_missing == 6)
{
if (Convert.ToInt32(label3.Content) > Convert.ToInt32(label4.Content))
{
MessageBox.Show("1. GRUP WON");
}
else
{
MessageBox.Show("2. GRUP WON");
}
}}
```

III.EXPERIMENTAL RESULTS

Tabletop games usually play with more players. This game is played with two groups of four people and each stick represents a person. For example, first

player has first stick. But players are able to influence the other player's bar, i.e. the first player can use the fourth stick, third stick or second stick. The ball begins action again with random direction with each ball's fall. Each shot with sticks are shown on the screen an increase. This increase is shown with textual box like a label or textbox. After playing in a group three times, sequence passes to other group. After playing in groups of three times which means that after playing in each group a total of 9 times, the game ends. At the end of the game, best group wins the game.

The buttons is given movement characteristic with using the properties of the button's touchmove and button's maximum limit is determined. Game completed moving ball and making some special value assignments. As a result, in multitouch applications many transactions can be made with events as touchmove, touchdown, touchup.



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