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Fighting Game for Optical Sensing Touch

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ABSTRACT: *Recent, the interests in touch technology are increasing by advances in smart IT technology and the applications. Accordingly, there are many developments of fighting game with touch events in smart phone. However, it is difficult to apply to touch function in medium or large size screen because of high cost to make the screen. For this reason, it is difficult to develop a fighting game that supports touch gestures in large size screen. In this paper, we propose a method to recognize the gestures by a touch sensor using optical type and applying for fighting game using it. First, the proposed method recognizes whether touch by this touch information, then traces the touch point until touch is released and determines gesture type through tracked path. Through this method, it is possible to be applied to recognize touch gesture in screen using optical touch sensor.*
Keywords: *Touch, Gesture, Depth Information, game.*

I. INTRODUCTION

There are many games in the world. The game industry has been developed for a long time. Firstly, game industry has been started in an arcade and it has been advanced home and recently to smartphone. Every year a device for games is smaller continuously. And the game's quality is higher than before every seconds. At the first time the graphic and game's rule was really simple and bad. Device was so huge and the quality was not good. But as time goes by, the device for games has been smaller and simply like recent smartphone. All most all people can play games on a small hand sized device like smart phone and also game's quality is excellent.

Many games are for one person. Just one person who wants to play a game sits down in front of a computer or other device and the person plays a game. Of course, the person who are playing in front of a specific device for games like computer is using network and the person is able to enjoy the game with many people on network. But it's not enough. These days, there are many nuclear families. Because many people are living in an urban. Parents are having their own jobs. Children has to go to a school every day. Many families who are living in an urban are busy because of their jobs. Many families lost their bonds. People are so busy each other. So the remained problems are that how is it possible to recover strong bonds of family by a game and how is it possible to apply this touch method which is the optical sensing touch method to game industry.

We could know that if we apply this touch method in game industry, we can decrease the production cost of a specific device for games and recover a strong bonds of family. It is possible to apply to game industry and this touch method is not only to be easy and simple but also to decrease a production cost when the specific device for game is made. Then how does it recover a family bonds.

A famous fighting game is developed by Nintendo [1]. In Nintendo brand, there are many games that are available to be played with many people. Also the people who play the Nintendo game can have a strong bonds from that game. Because they act something together. For example, there is the tennis game of Nintendo as shown in Fig. 1. This is able to be played with many people. Nintendo Wii is usually used at inside. Many friends or families are together and play a game. As this action, people can have a strong bonds. This Nintendo Wii is one of the latest generation of video games consoles and incorporates a number of innovative features designed to target a broader demographic of users than other gaming systems [2]. That is one of the reason that how to get a strong bonds. This user-interface method has an advantage compared to other interface methods.

However, this method is inconvenient for applications of wide sized screen and direct screen touch. The advantage is that the optical touch method [3] can be used on wide sized screen like wall. If this touch method is used in game industry, the game industry will be advanced more fast because this touch method just needs only an even wall. It doesn't need a specific device like a computer or TV. Just there can be an even wall. So this touch method can be available everywhere. As this reason, game industry is able to be advanced more fast. We applied this touch method in fighting game. There is a sample of fighting game. We show how this touch method is used in fighting game as a sample.

Figure. 1. Tennis game of Nintendo

II. IMPLEMENTATION OF FIGHTING GAME THAT IS USED WITH MULTIPLE TOUCH GESTURE.

The touch sensor consists of resistive type, the capacitive type, and the optical type [3]. Recently the optical sensing method have been used for the large size of touch screen. The optical method detects a pointer over the touch screen from the outside camera without using the physical touch sensor.

In this paper, it uses a touch gesture. Because it is easy to users who want to play a fighting game. In the present, almost all fighting game is installed in a specific device which has a joystick and buttons. And the device is too expensive to be made in company's aspect. But if this method which is worked by optical sensing is used in the company which is making a fighting game then the company can reduce the basic cost to make the device. Fig. 2. shows the flow chart of the principle of touch.

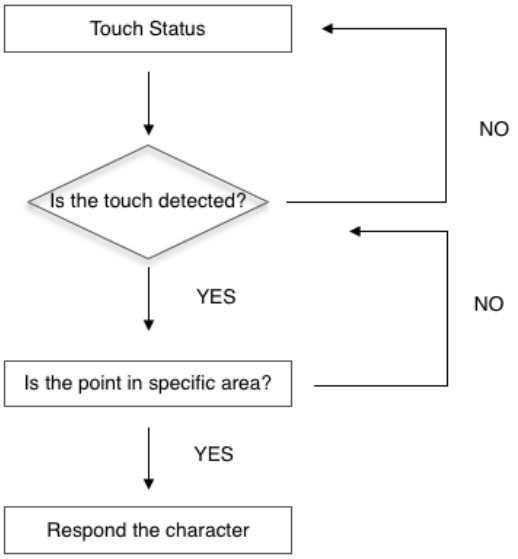

Figure. 2. Flow chart for the principle of touch.

The touch gesture is equal to above the principle. In a company's aspect which makes a fighting game, they just can use the optical sensing method. The company doesn't need to make a complicated device that is for fighting game software. The company just can make only the fighting game software and use the optical sensing method.

There is an explanation of the principle for the work. There are 4 classes which are UNIT, Controller, Touch Gesture, Game classes in regular sequence. UNIT class has a variable which is Pos x and has 3 methods. Pos X is a character's position. The game's character can move horizontally. 3 methods are an action of

character. Controller class has a method that is play(). This method is for playing status. Touch Gesture class has a method that is Get a gesture(). This method is to get an action from UNIT class. And Game class inherits 3 classes that are UNIT, Controller, Touch Gesture. Game class has a method that is work(). This method receives variables from inherited classes. Fig. 3 shows the principle of work.

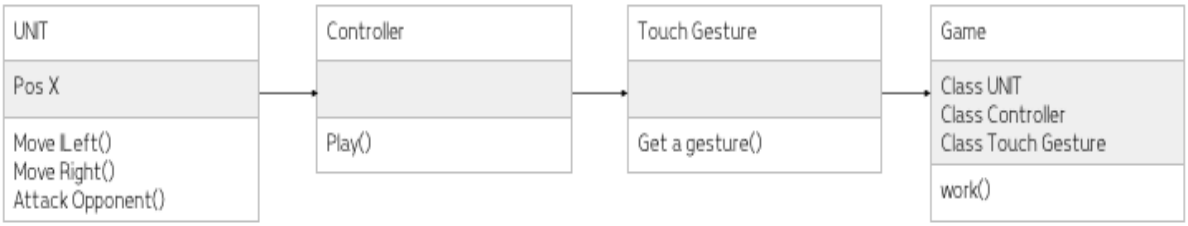

Figure. 3. The principle of work.

There are 3 examples in Fig. 4. This is a demonstration with an optical sensing method of touch. This game is a simple game. The game's explanation is here. There are 2 characters which are an enemy each other. The winner is the person who has pressed the circle button how fast and how many times. Users who play the game just can press the circle button fast and many times. After 5 seconds beginning of the game, there will be an attack time. Users has to play it which is "rock, scissors, and paper". And the winner of the "rock, scissors, and paper" will have an advantage that pushes a certain distance to opponent.

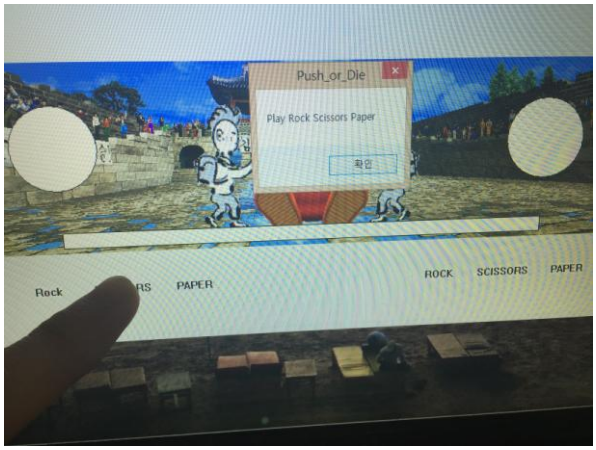

Figure. 4(a).

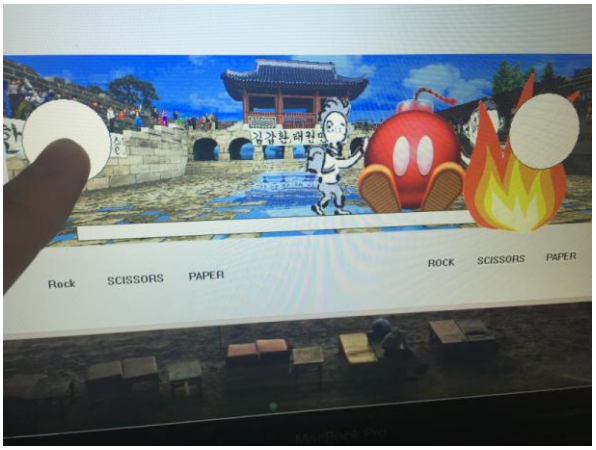

Figure. 4(b).

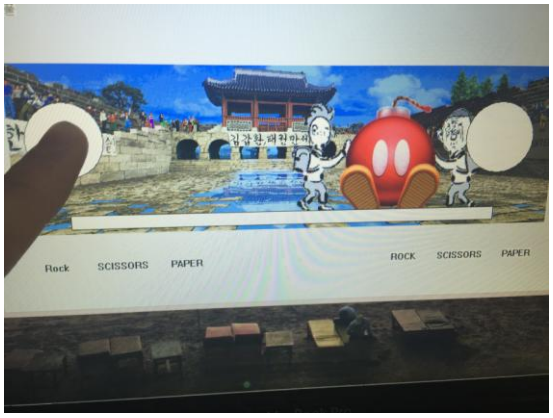

Figure. 4(c).

Fig. 4(a) shows that users have to play "Rock Scissors Paper". The winner of "Rock Scissors Paper" has an advantage like Fig. 4(b). The winner could push the opponent for the certain distance with the effect which is presented a fire. Fig. 4(c) shows the state that player 1 who is located at left side is getting a win. This is to show us that player 1 has pressed the circle fast and many times.

III. CONCLUSION

We presented the touch method of optical sensing. We showed one part that is applied with optical sensing touch method. We applied for a fighting game. If this method is used in game, it can reduce the production cost to make a specific device for game. And if this touch method which is the optical sensing touch method is used not only fighting game but other genre game, the users who play the game especially children can enjoy the game more easily. Because the users don't need to learn how to control a joystick and buttons for playing game. They just can click buttons which is on screen and can play the game more comfortably and interesting. It can be judged that game industry will be more actively because of this touch method. Also it is able to be used at outside because this touch method doesn't need to a special place, it needs only even wall. If there is some even wall, people can always play a game with applied the touch method. This optical sensing touch method is available to be used many part of variable industry.

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