Puzzle Game in Touch Pad

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Abstract: The puzzle game has been used in many games because it causes interest. In this paper, we present a method to implement a puzzle game in which a terminal is provided a touch pad. This puzzle game getting the right and the left characters is simple and easy, but it allows user to focus on the game by causing user's wits and memory.

Keywords: *Puzzle game, Touch sensor, Entertainment*

I.   INTRODUCTION

Because the smartphone recently has been widely used, users have begun to increase a lot of people interested in the touch game. As a result, the research interest fields are forward to many touch sensors, the application game fields. However, because the touch pad is not applied in medium and large sizes screens or the conventional monitors, even though there are many touch games, it is a situation that the touch game cannot be used. In this paper, a method is presented to implement to allow the puzzle game [1, 2] in the terminals provided touchpad. The general puzzle game is troubleshooting style. There are many kinds of puzzles, such as word puzzle, tile puzzle, number puzzle. They are considered to be a form of entertainment, but they can be considered a form of learning. For example, Sudoku [3] is a mathematical puzzle, but also a complex game to resolve while going to guess the numbers under the rules of the game. However, the proposed puzzle game is not complicated, though it is a simple, user requires memory skills and agility.

II.   SEVERAL TOUCH SENSING METHODS

Currently the touch sensor is widely used in small size screen pads, such as smartphone, tablets. The touch sensor is composed almost the resistive type [4](Fig. 1), the capacitive type [5](Fig. 2), and the optical type [6].
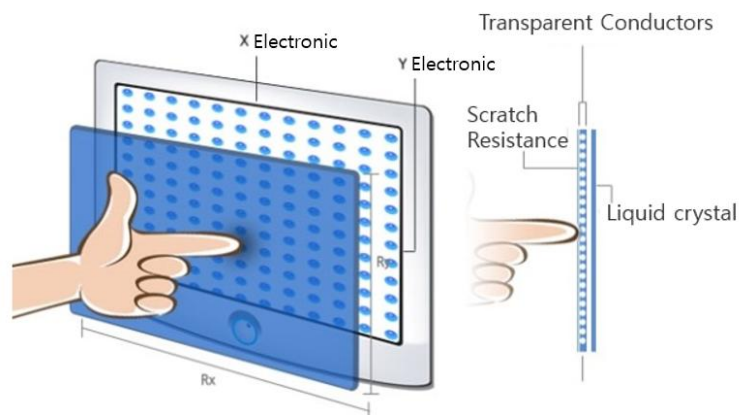

Fig. 1: Resistive Touch

The resistive type is called the pressure sensitive method in the sense that pressure is applied, also called the resistive film method. This method detects the point that is pressed over a thin film, the conductive layer detects the amount of changed current and the resistance, and finally the A / D controller recognizes the point. The disadvantages of the resistive type are that the reaction is slow and multi-touch is not possible. When either a finger or the body region comes into contact with the touch screen and the electrons flowing in the glass will move to the body because of the conductivity of the human body. The capacitive touch sensor measures the touch coordinates from detecting these electronic changes. The capacitive type has a high contrast in comparison to the resistive type, but can be very expensive, and has the drawback that the touch is possible by

conductive objects. These resistive and capacitive types have the limit to the enlargement of the screen since the physical touch sensors are inserted into panel. Recently the optical sensing methods have been used for the large size of the touch screen. The optical methods detect a pointer over the touch screen from the outside camera without using the physical touch sensor.
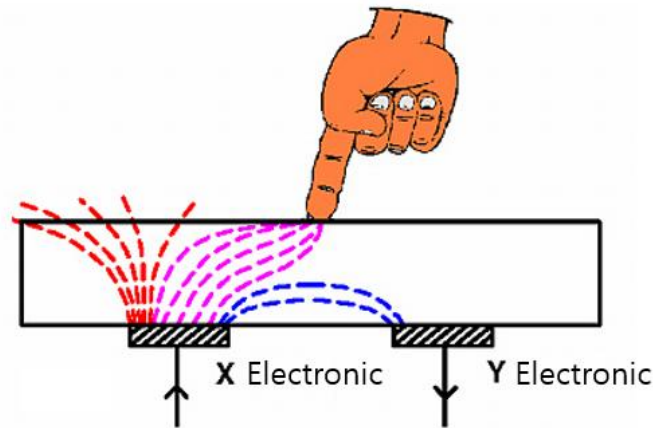

Fig. 2: Capacitive Touch

III. PROPOSED PUZZLE GAME IN TOUCH PAD

Recently as the spread of the Internet, many kinds of the game have been researched and developed, and the user is also increased rapidly. Among them, people prefer a lot of games of touch that can be addictive, simple. So we propose a puzzle game for the touch screen with a simple interface that user can be a variety of ages, regardless of sex. In this paper, we implement a puzzle game with two types of characters, and optical touch features. Fig. 3 shows the flow chart of the proposed puzzle game.

From the touch detection by one type among three touch sensing methods, the spatial coordinates are determined according to corresponding pointers. Then two pointers are compared, one for touch pointer and the other for character location. Finally, the executing of the events is shown to the user by outputting to the interface.
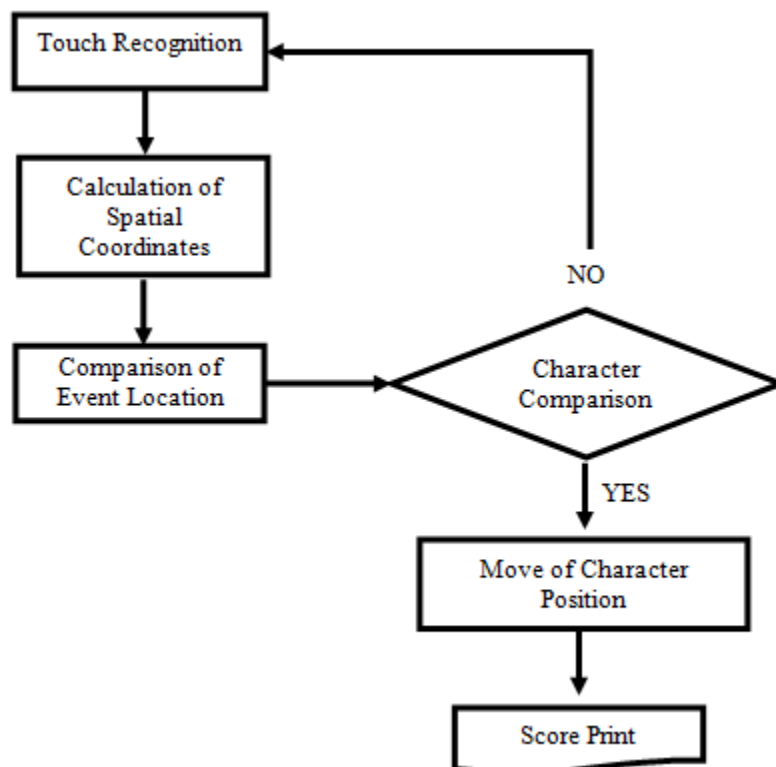

Fig. 3: Flowchart of proposed puzzle game

Fig. 4 shows a simplified abstract class diagram for the proposed game. A TouchSensor class acquires the touch coordinates, and an object of Control class performs a central role to progress the game.
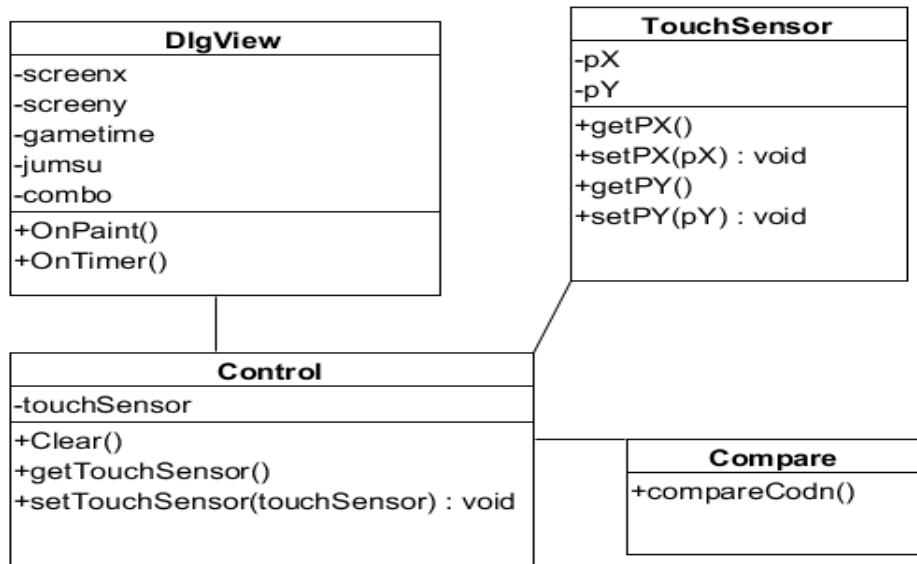

Fig. 4: Abstract class diagram for proposed game

Fig. 5 shows that the touch is recognized by the optical touch method, and the proposed puzzle game is implemented. It consists of two buttons on the right and the left click event, the left or right side is identified by the coordinates of the screen divided in half because it is a simple interface.
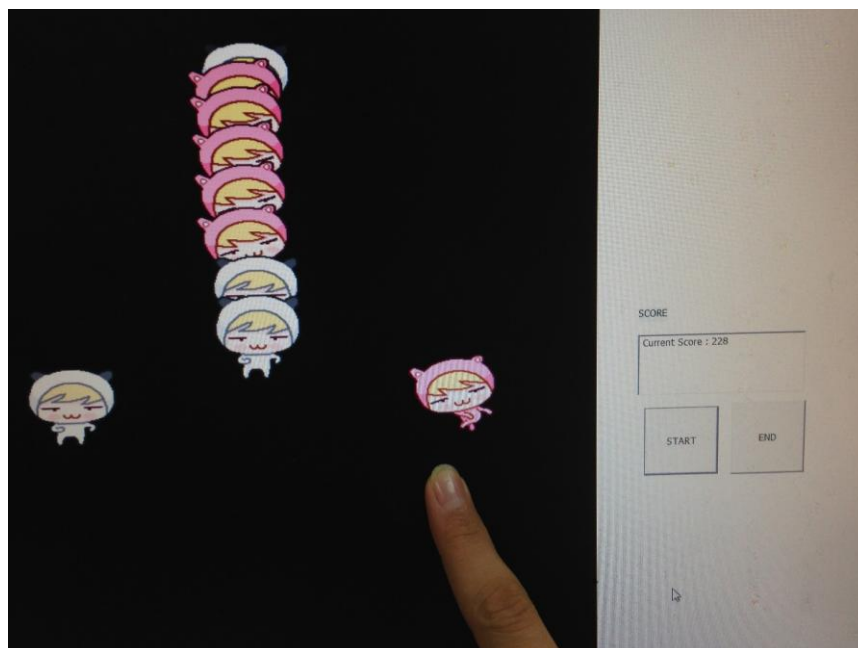

Fig. 5: Game screen of proposed method

As shown in Fig. 6, the difficulty level is risen by increase of the number of characters in accordance with the progress of the game. It allows you to be a good game score if you continuously succeed the touch. Operation of the game is simple, but the game may be carried out not merely the story of the game.
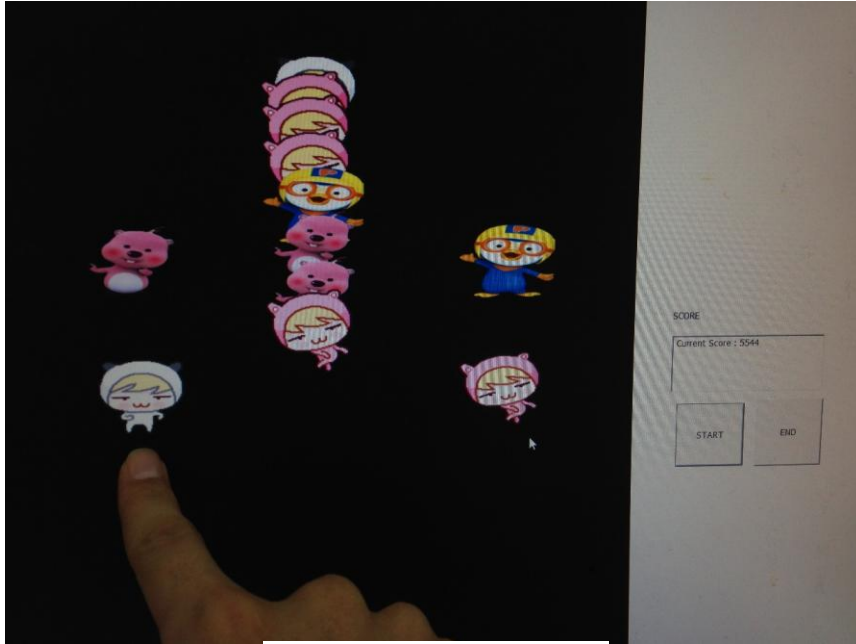
Fig. 6: Rising difficulty of game

IV. CONCLUSION

In this paper, we propose a method for applying a puzzle game in medium and large touch screen sensor. It can be determined whether or not the touch by a touch sensor. From a touch coordinate space, a puzzle game can be used by providing an event. This game is simple, but can give a strong curiosity to the users, also will be a situation which results in interest.

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