Tangible Tube

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ABSTRACT

Tangible Tube is a device that invites gamers to play in a completely unprecedented form of interactions. Instead of traditional devices such as keyboards, mouse, joysticks and wii remote controls that challenges gamers on how swift and fluent their fingers are, tube blower challenges gamers to play games using a tube that they will control with their mouth.

Author Keywords

put author keywords here

ACM Classification Keywords

H.5.2 Information Interfaces and Presentation: Miscellaneous—*Optional sub-category*

General Terms

See list of the limited ACM 16 terms in the instructions, see http://www.sheridanprinting.com/sigchi/generalterms.htm.

IMPLEMENTATION

The Tangible Tube system has two components; the tube itself and the drawing screen. The tube is attached to an acrylic enclosure that houses a small Force-Sensing Resistor (FSR) and Inertial Measurement Units (IMU) that possesses 5 degree of freedom. The IMU captures the 3-dimensional motions of the tube and translate it into 2-dimensional movement in the screen. Additionally, it also records the angle in which the tube is rotated and how fast it is rotating. With the FSR integrated in the tube, how hard the user breathe into the tube is also captured. All of these informations will then be passed into arduino which will be read by a processing module. Currently, the drawing screen is simply a computer screen although we are working to replace it with a standalone screen so that the Tangible Tube system will feel more natural to the user rather than just another computer application.

We have developed two applications to demonstrate the interactivity of our Tangible Tube. The applications that we developed are written in processing since it provides a smooth interface with arduino while boasting numerous graphical functions. Developing applications that work with our Tangible Tube require minimal changes to an existing processing code since we have made the interface to the hardware to be very simple and generic.

Painting

Our first application is a painting application program. In this application, the user will be able to paint by blowing into the tube and the harder the user blows, the thicker the color is. Changing the color of the paint is achieved by rotating the tube.

Balloon Popping Game

Our second application is a game in which the user is required to pass through a set of levels by shooting down balloons that randomly appear in the screen. This is done by moving the pointer to where the balloons are and blow into the tube. To make the game more interesting, the user will only be able to shoot down a particular balloon if the color of the pointer matches the color of that balloon. Similar to the previous application, changing the color of the pointer is done by rotating the tube.

ADDITIONAL AUTHORS
REFERENCES