

레이저 다이오드 및 빛센서를 이용한 인터랙티브 중국 전통악기 구현

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Implementation of Interactive Chinese Traditional Instrument using Laser Diode and Light Sensor

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● 요약 ●

This paper introduces what the interactive projection technology is, and how to use this technology to make a musical instrument. There have been many art works and business products completed by the interactive projection technology, but this technology seldom has been used in the musical field, so we want to make a simple instrument by interactive projection technology, and expect more people to develop this field in the future.

키워드: 인터랙티브 투영(interactive projection), 악기(instrument), 레이저(laser)

I. 서론

Interactive projection system is a new cutting-edge technology, which is widely used in the field of advertising. It is different from traditional advertising technology because it can let the audience get involved and have a lot of fun. It is suitable for all public indoor places, especially shopping, recreational and educational places. By using this technology, many advertisements can attract more customers and create more gains. Certainly it is not only used in the advertising field but also used in many other fields. Now we will use this art form to make an interactive instrument.

II. Related research

Interactive floor projection is a brand new way of display, using a high-lumen projector to project videos onto a common ground. These videos can be a surface, a deciduous ground, a snow field, or other common landscape. When somebody goes through the projective area, the video will get some interesting changes according to the position of the people[1]. For example, a circle of ripples appears on the surface, the fish in the water run away, the leaves on the ground blown away by the wind, or some footprint left on the snow field, as also, it can project a mini playground so that two or more people can play a football match on the ground.



Fig. 1. A Interactive projection football game
그림 1. 인터랙티브 투영 축구 게임 [2]

III. Subject

1. Installation

In this example figure A is a sensing device(camera), which can catch the analog signal's changes outside, and transport it to the analytical device B(computer), and then output the videos on with a output device C(projector).

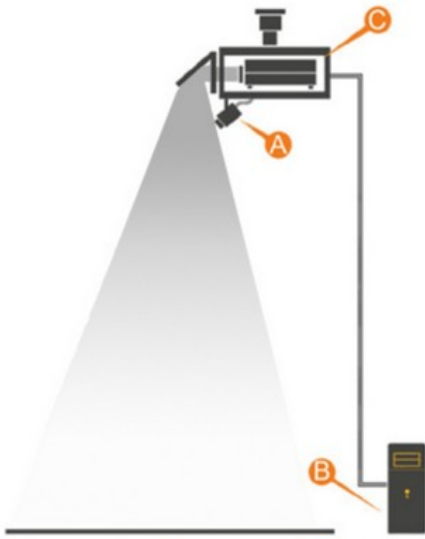


Fig. 2. Projection structure
그림 2. 투사 구조

We have made a model as the projective interface, which is a kind of Chinese traditional instrument named GuQin,

2. Design and Implementation

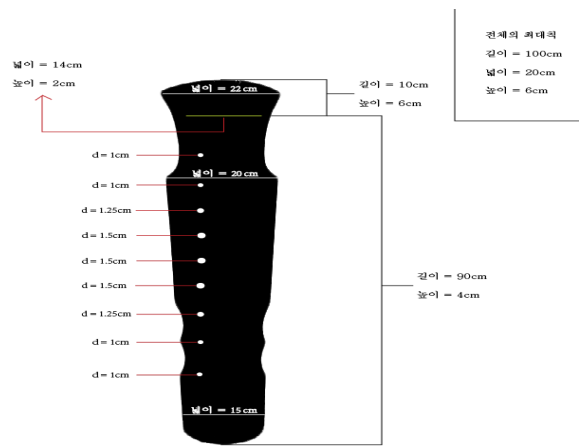


Fig.3. Instrument Design
그림 3. 악기 설계

The size of this model is a little shorter than the real one, because we fixed seven laser lights on one side of this model, and the other side we fixed seven light sensors to receive the signal of each laser light, if it is too long, it would be very difficult to fix the sensor on the right position, We project the video onto this model and when the user "play" the instrument, their fingers will cut off the light strings, and sensed by the sensors, the sensors are connected with the computer by the Arduino, and then the signal will be passed to the computer, analysed by the Max/Msp. Each sensor has a particular value, and each value can trigger a particular video effect with sound, so now we can play a simple song and enjoy the wonderful visual effects with these invisible light stings.



Fig.4. Implementation
그림 4. 구현 모습

IV. Conclusion

Using Interactive Projection Technology we can make many new and fashion things and it changed the traditional way of expressing arts. Now with this technology audience can immerse himself into the virtual world and interact with arts, it will not only give the audience the simple visual enjoy but also give them an all-around sensorial experience.

감사의 글

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References

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- [2] Baidupedia, <http://baike.baidu.com/view/561325.htm>