

# Gesture-based interface

[Technology](#), [Computer](#)



Gesture recognition is a mix on language technology and computer science which helps in achieving interpretation of human gestures with the use of mathematical algorithms. Any kind of movement made by human body is a gesture and according to current researches, gesture technology is now focusing more on emotion gestures, hand and face gesture.

This technology is playing a very important role in many fields such as

Smartphones, Tablets and other devices

Automobiles

Transit sector

Electronics sector

Gaming sector

Gesture based interface technology have turned out to be one of the basic innovations that can decide the future of video games /computer games. In current time, video games offer interaction with players without the need of using remote controls and allows players to perform actions and exchanges with game characters and game objects displayed in the virtual world in front of their screen. But for these advancements to achieve, new algorithm and calculations have been incorporated which makes use of sensors, cameras, accelerometer sensors and visual pattern recognition devices. Trend shows that games that adapts true life experience interface have a very good chance of making a good successful name in the gaming industry. So, almost every big game producing companies are spending resources in their gaming development team and looking for more advanced technology to implement so that they can beat their competitors and can provide

entertaining and more exciting experiences to their consumers (Rocetti, Marfia, & Semeraro, 2012)

Gaming industry is a multi-billion industry, so many new technological ideas and trends are emerging in this field. Video games designer of big gaming companies are gradually moving their consideration of playing games at homes, expanding their interests to games which can be played in open areas such as museums and gaming exhibitions. However, till date, only a few number of researches have been done to consider the number of problems which occurs when making a video game. This paper will help us in understanding the concept of gesture interface and how its implemented with games and other multimedia devices. Many research has been done on how to better the experience by favoring big screens for a better and more immersive experience. While touchscreen devices have significantly enriched our experience with tablets PCs for example iPad, tablets etc., technology used in large displays “ being used in group meetings, presentations or lectures still remain unchanged. we all know that it’s quite difficult to apply touchscreen technology to such huge displays.

In this research paper, the author displayed a new game design “ Laser shoot” for FPS games. Earlier, users used to play shooter games on computer using a keyboard and a mouse or a joystick controller. Currently, we use CRT display technology for real like gun interface because CRT technology can detect beam direction and able to detect shooting position. However, CRT technology does not support big screen displays because of its manufacturing limitations. In order to encourage a community oriented and

experience for gaming users, the author designed a new input interface technology which includes a laser gun and a large screen which has laser enabled spot detection capability. This interface successfully creates a real like environment for gamers and according to the results, the laser-based interface makes a characteristic UI conditions which helps learners to appreciate playing a FPS quickly, and furthermore gives experienced players another gaming knowledge.

#### Current research development

The author has developed a laser shoot technology that recognizes laser movements displayed on a smart display using a computer. With this technology, users can use ordinary laser points in a way that they experience laser pointers as extended fingers on a display. So, therefore, with the use of this technology, users can now draw pictures, diagrams, bar graphs and anything using their normal pointers on large display from a normal distance with users at the same or different locations. example: during meetings, presentations etc.)

This laser shoot technology has been a ground-breaking revolution when it comes to online learning and helps interacting learners, teachers, trainers from all over the globe to connect and share knowledge. It also helps people with different expertise and skills to engage in different kind of learning activities.

The idea of this technology not only helps people interacting but can also be used in terms of gaming aspect and specially first person shooter games FPS

so the researcher applied this technology with FPS gaming environments. The gaming interface between the player and the virtual world was improved by using a new control using laser shoot technology laser guns and a display to recognize the laser shoot signal. Their system created a reality based gaming world for players and according to the results, it allowed players to experience a better gaming experience (Shim & Kim, 2016)

### Related works and comparing different technologies

First person shooter FPS is a genre of video games where the game is rendered in the virtual world from the players' point of view involves aiming guns and other weapons. FPS features elements like running and shooting. As you can see from the picture (1), modern shooter games are played on a computer machine using a keyboard and mouse and using the layout (WASD) and arrow keys to control the game. Mouse controls the free look of the game and keyboard adds to other actions like running, shooting and other variations. We can also experience shooter games using CRT display as can be seen in the picture below. A real gun interface is used with CRT monitors for aiming and CRT monitors because of their good picture render capabilities,

As can be seen from the picture below, PlayStation also uses a different kind of technology which makes uses of sensors called PlayStation move which communicates with their detectable motion controller to allow users to aim and shoot and also includes some buttons which helps in walking, running, strafing etc. For this technology to work, PlayStation uses a camera which

detects light signals from the controller's sensors and interprets the action on the screen.

Another example of gesture based interface is pistol mouse as shown in the picture below which makes use of hand gestures to allow shooting and recognizes movements of player using webcam images

Another device called chairIO was developed by Hamburg university which is similar to a joystick but make use of user's body motion and is based on a stool. In this device, they created a gun which had a motion detecting product called inertiacube2 and used virtual reality

Laser shoot technology has an interface which makes use of a gun with laser shooting and a display which can recognize laser. Laser shoot includes a laser gun, an active screen and last a laser beam recognizable signal processing module.

The above picture shows the overall process of designing laser shoot technology

In this research, the author covered many related issues going from hardware to programming design that help fabricating and new devices for a FPS game and develop a new gaming interface design for FPS gamers. In order for this research to be possible, a large screen was very important but as we know, previous technology and user interface does not support real like interface and a large display. Shooter games on PC supports large display but the use of WASD layout on keyboard is traditional and old now. Even playing FPS games on CRT makes use of a realistic gesture based gun

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but due to CRT's manufacturing limitation, it cannot support large screen display. So, in order to encourage an environment among users/players, they designed a new gesture based interface called laser shoot technology which makes use of a large laser recognized display and a laser gun. Their research work contributed to gaming world by using laser inputs, which can help the world in developing more immersive gaming experience for human computer interaction.

Future research works incorporate higher acknowledgment rate for three letters including 0, v and y, which are quite difficult for humans to implement. Laser Shoot makes a characteristic UI conditions which helps novices to appreciate playing a FPS quickly, and furthermore gives experienced players another gaming background.

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