# Blue-Ray: A new way to point

Sonal Gupta
Department of Electrical Engineering
Indian Institute of Technology Bombay
Mumbai, India 400076
Email: guptasonal@ee.iitb.ac.in

## I. Problem Statement

The laser pointers currently being used to point at a projector screen work very well in a single screen hall. However, in a multiple screen hall, these defeat the purpose of multiple screens since they can point at one screen only. The aim of this project is to develop a solution to this problem using the bluetooth interface between the pointer and the laptop.

## II. Solution

The simplest solution to this problem could be to use the already existing bluetooth interface between the pointer and the computer. The pointer key, when pressed can indicate the computer to move the mouse pointer on screen which will then reflect at each of the screens. Before pressing the pointer key, the mouse pointer can be changed to some high intensity color and pointed shape which resembles a laser pointer. However, there are some challenges is this solution. We would need to install an accelerometer in the pointer to detect motion and send signal to the computer. The motion of hand has to be properly calibrated so as to give it a real feel just as laser pointer. The portability of the system should be maintained even after the added features.

## III. Implementation and Challenges

The following challenges are likely to be faced during designing:

1) Initial position can be changed when the button to point is not pressed. Thus the initial position has to be subtracted from the readings.
2) Differentiation between angular and linear motion:
   Since both angular and linear motion can lead to same movement on screen thus the angular and linear components have to be extracted from the reading and calibrated. This extraction can be done using the initial position.
3) The major challenge would be to decide and calibrate which cases of angular motion are to be considered and which to be ignored. This problem will be dealt with during implementation with trial and error.

## IV. Components and Costs

1) Bluetooth Module and Dongle: ₹ 1500
2) Development Board(Arduino): ₹ 1500
3) Accelerometer: ₹ 500
4) Miscellaneous: ₹ 1500

Total: ₹ 5000

## V. Timeline

1) May 5: Study working and interfacing of Bluetooth
2) May 8: Communication between Laptop and Controller via Bluetooth
3) May 12: Accelerometer interfacing with controller
4) May 15: Move mouse pointer remotely, using the system
5) May 15-28: Vacation
6) June 2: Already existing key implementation and interfacing with ppt
7) June 8: Finishing