- Sim900 is simple to use and is low in cost
- Interface directly with computer serial port

4. Implementation and Results

The system is tested and achieved its objective. The Figure 7 shows the prototype of the designed system.

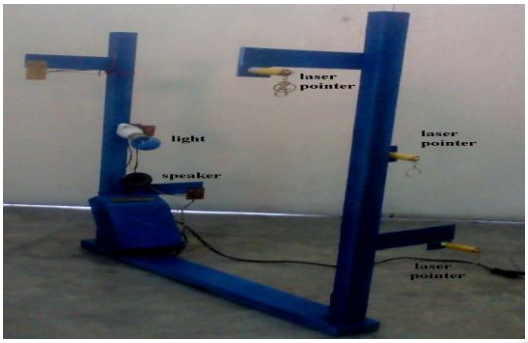

Figure 7: Prototype of designed system

The designed prototype has been tested for its proper working. Laser virtual fence is connected to the Boundary monitor block via connecting wires. Button Cells have been used to drive the laser units. Each unit needs three cells, each cell of 1.5V, to produce laser beams of appropriate intensity. The Boundary monitor block is switched on using power supply of 5V. A volunteer has been asked to work as intruder for the system. The interrupted laser beams have been detected by boundary monitor block. On detection of intruder the warning lights switched on, speaker blew off and warning message was sent to the receiver on his mobile receiver. The sent message is displayed on screen. Results are shown in figure 8 and 9.

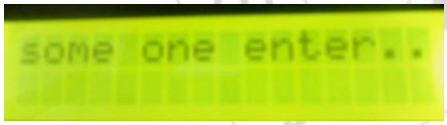

Figure 8: Sms display on LCD

Figure 9: Light is ON

When no occlusion occurs, LCD displays 'monitoring' as shown in figure 10. If intrusion occur in reverse direction then it shows 'someone exit' on LCD displays as shown in figure 11.

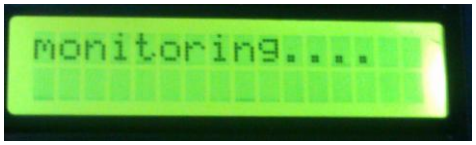

Figure 10: Checking for intrusion

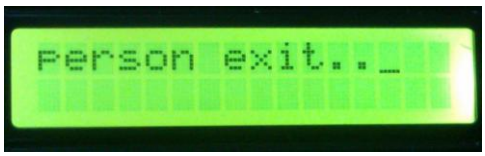

Figure 11: Intruder exits the field

Results of testing are shown in table 1.

Table 1: Results

Sr. No	Height of Laser 1	Height of Laser 2	Height of Laser 3	Height of Intruder	Detection of intrusion
1	1 feet	2 feet	3 feet	0.5 feet	No
2	1 feet	2 feet	3 feet	1 feet	No
3	1 feet	2 feet	3 feet	1.5 feet	No
4	1 feet	2 feet	3 feet	2 feet	Yes
5	1 feet	2 feet	3 feet	2.5 feet	yes
6	1 feet	2 feet	3 feet	3 feet	yes
7	1 feet	2 feet	3 feet	3.5 feet	yes
8	1 feet	2 feet	3 feet	4 feet	yes
9	1 feet	2 feet	3 feet	4.5 feet	yes
10	1 feet	2 feet	3 feet	5 feet	yes

5. Conclusion

The developed virtual fence to control intruder management will automatically detect the intruder, send warning message to owner of field by GSM and also to duty personnel by speaker and lights. This will reduce the farmer's problem regarding their field security and improve the life style of guards. The key features of this product is

- Low maintenance
- Less man power
- Low Power consumption
- Easy to use and install
- Ease of modification
- Automated operation
- Portable

It can be used at open wide areas like airports, military base, and residential quarters as alert and detection system. To enhance the effectiveness of this barrier system, a heat generating device can also be added along with speaker system of boundary monitor block. This device will start generating heat as soon as the intrusion is detected. The level of heat generated will rise as the intruder moves towards the boundary and will become unbearable for the intruder.

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