

## BLUETOOTH BASED HOME AUTOMATION

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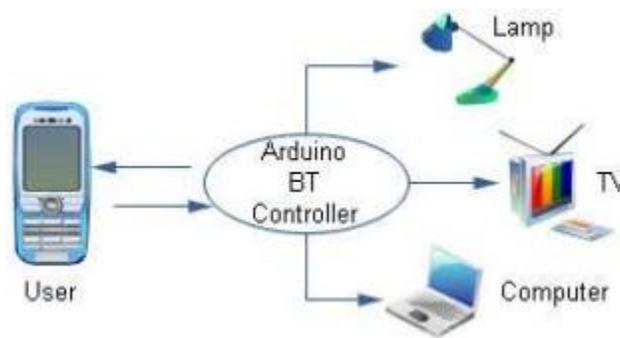
### Abstract

Significant advancements have been made in the field of consumer electronics over the last century. Various 'intelligent' appliances, such as cell phones, air conditioners, home security devices, home theaters, etc., are designed to understand the notion of a smart home. The design is based on the stand-alone Arduino BT board and the home appliances are connected via relays to the input / output ports of this board. The communication between the cell phone and the Arduino BT is wireless. This system is intended to be low-cost and scalable, enabling a range of systems to be controlled with minimal modifications to its heart.

**Key words:** Bluetooth; Arduino; smart home; cell phone.

### Introduction

Home automation is now one of the main applications of Bluetooth technology. Operating over an unlicensed, globally available 2.4GHz frequency, digital devices can be connected within a range[1], [2] of 10 m to 100 m at speeds of up to 3Mbps based on the Bluetooth device class. This article presents a low-cost, safe cell phone based, flexible home automation scheme. Home appliances are linked to the Arduino BT board[3] and the communication between the cell phone and the Arduino BT is wireless. There is wireless communication between the cell phone and the Arduino BT.



## Methodology

The automation system[4] comprises of two primary hardware parts: the cell phone and the Arduino BT board. The cell phone hosts the Python script, which allows the user to access the home appliances as well as control commands for the devices. This Python[5] language script communicates with the Arduino BT board and establishes an ad-hoc communication protocol between the two machines that enables controlling the action of Arduino BT board. The Arduino BT board can be programmed wirelessly via a Bluetooth connection using a high-level interactive C language microcontroller. The Bluetooth antenna in our module picks up the packets sent from your cell phone. Different home appliances are connected to the Arduino BT digital output ports via relays to provide high current and voltage compatibility. The feedback circuit is designed and implemented to indicate the device's actual status after receiving the ON / OFF command from the cell phone. As soon as the command has been sent to turn the device on, the feedback circuit senses the current and sends the output signal by turning the respective led on the switching circuit to indicate that the device is on.

## Conclusion

The aim of this paper was to create a Bluetooth wireless home automation system. The full functional home automation system was tested and the wireless communication between the cell phone and Arduino BT in a concrete building was found to be limited to < 50 m and the maximum range of 100 m in an open range was reported. The system is secured by any user or intruder for access. Users are anticipated to purchase a pairing password for Arduino BT and a cell phone to access their home appliances. For any devices that require on-off switching apps without internet connection, this scheme can be used as a test bed.

## References

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