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# IOT BASED ANTENNA POSITIONING SYSTEM FOR WIRELESS NETWORK

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**Abstract:** All wireless communication systems work on antennas for reception of signals. Proper positioning of antennas is necessary according to satellites/transmitters to achieve effective wireless communication. So here we proposed an IOT based antenna positioning system that allows for remotely positioning of antennas based over IOT. Here we use sensor based system with motor on each antenna using antenna to check its facing direction that is transmitted over IOT.If the directionof a satellite or transmitting station changes over time,theantennadirectionmustalsobechangedaccordingly.Thereceivingantennasmaybe placedfarapartfromeachotheracrosstheglobe.Sooursystemallowsforantenna positioning over very long distances. The antenna positions are visible over internet to controlling operator on the IOT GUI. We here use IOT Gecko to develop the antenna monitoring gui system. Our system allows for monitoring antenna direction as well as transmitting new coordinates to position the antenna and motor appropriately positions the antenna accordingly.

## I. Introduction

### INTERNETOFTHINGS-IOT

The IOT concept was coined by amember of the Radio Frequency Identification (RFID) development community in 1999, and it has recently become more relevant to the practical world largely because of the growth of mobiledevices,embeddedand ubiquitous communication, cloud computing and data analytics. Imagine a worldwherebillionsofobjectscan sense, communicate and share information, all interconnected overpublic or private Internet Protocol (IP) networks. These interconnected objects have data regularly collected, analysedand used to initiate action, providing a wealth of intelligence for planning, managementanddecisionmaking.This is the world of the Internet of Things (IOT). Internet of things common definitionisdefiningas:Internetof things (IOT) is a network of physical objects. The internet is not only anetwork of computers, but it has evolved into a network of device of all type and sizes , vehicles, smart phones, home appliances, toys, cameras, medical instruments and industrial systems, animals,people,buildings,allconnected ,all communicating & sharinginformation based on stipulated protocols in order to achieve smart reorganizations, positioning, tracing, safe & control &evenpersonalrealtimeonline monitoring , online upgrade, process control & administrationWe define IOT into three categories as below: Internet of things isan internet of three thingsPeopletopeople,Peopletomachine /things,Things/machinetothings /machine, Interacting through internet. Internet of Things Vision: Internet of Things (IoT) is a concept and a paradigm that considers pervasive presence in the environmentofavarietyof things/objectsthatthroughwirelessand

wired connections and unique addressing schemes are able to interact with each other and cooperate with other things/objects to create new applications/services and reach common goals. In this context the research and development challenges to create a smart world are enormous. A world where the real,digitalandthevirtualare converging to create smart environments that make energy, transport, cities and many other areas more intelligent.

Internet of Things is refer to the general idea of things, especially everydayobjects, that are readable, recognisable, locatable, addressable throughinformation sensing device and/or controllable via the Internet, irrespective ofthe communicationmeans(whether via RFID, wireless LAN, wide area networks, or other means).Internet of Thingsisanewrevolutionofthe Internet. Objects make themselves recognizable and they obtain intelligence by making or enabling context related decisions thanks to the fact that they can communicate information about themselves. They can access information that has been aggregated by other things, or they can be components of complex services. This transformation is concomitant with the emergence of cloud computing capabilities and the transition of the Internet towards IPv6 with an almost unlimited addressing capacity.The goal of the Internet of Things is to enable things to be connected anytime, anyplace, with anything and anyone ideally using any path/network and any service.

## II. BlockdiagramandWorking

IOT has become one of the mostimportant technologies of 21st century. Internet Of Things (IOT) refers to a physicaldevicethatisconnectedtothe

internet that is collecting and sharingdata, it is possible to turn anything intothe part of IOT. Now that we can connect everyday objects, kitchen appliances,cars, thermostats. baby monitors to the internet via embedded devices, different sensors. Communication is possible between people, processes, and things. IOT devices are designed to be small,have a long wireless range, and have a long battery life. However every single Internet Of Thing (IOT) device needs an antenna. The antenna is the means by whichanIOTdevicereceivesandsends a signal tothe outside worldandtherefore is the fundamental element ofan IOT device. So it is very important to have proper antennas. The antenna is crucial it may make or break the communication with devices. A correct positioningofantennawillgiveyou good wireless range or it will cause your devices to not even be reachable in the field. So for the proper positioning of antennas is necessary for the wireless communication. This system is used to direct the antenna direction in correct position. This system is difficult to achieved ifantenna isplacedin the wrong direction. The important featuresof this system are as follows:

1. Parameters Stored: The user can select among the parameters like angle and direction in order to position the antenna with great ease through this application.

2. Direction Specified: The user need to specify the direction whether clockwise or anti-clockwise direction.

Antenna is moved by user command received through position Blynk app.Blynk is an IOTplatform aimedtosimplify building mobile and web applications for the IOT. It is used for connecting devices to the cloud, designing appstoremotelycontrolandmonitor

them. The Blynk app act as remote and is usedtosendthesignaltotheMCU through the internet. According to commands received from Blynk directionof antenna will be changed as per specified direction of motor. This will result to positioningofantennaatrequiredposition.

**Blockdiagram**


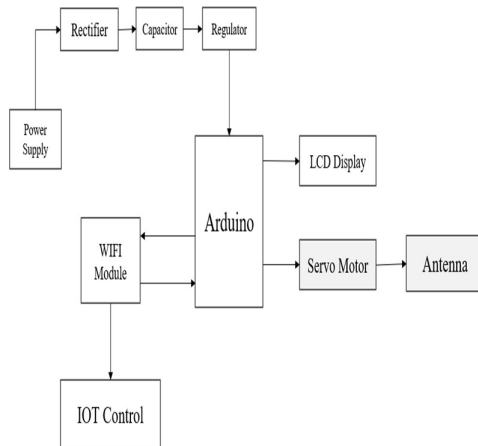
**Fig.1 Block Diagram**

**Methodology**

The system consist of two parts.The circuit of antenna and motor control and the WIFI app for user commands. The circuitinstalled consists of various components such as Servo motors interfaced with arudino.The arudino controller is responsible for positioning the motors. Depending upon current reading of accelerometer, the controller takes input from user through the wifi app via wifi module and motors move to intended position. As a result, the user will receive current position of antenna and positioning of antenna will be done according to user commands.

**III. Advantages, Disadvantages and Applications**

**A. Advantages**

- Canidentifydifferenttypesof signals

- Can increase the range of detection
- Can adjust antenna angle to accurate level
- Highlyreliable

**B. Disadvantages**

Investment and Maintenance are disadvantages.

**C. Applications**

Parameters stored:- The user can select among parameters like angle anddirection in order to position the antenna with great ease through this application.

Direction specified:-The user needs to specify the direction whether clockwiseor anti-clockwise direction.

Signal strength:-The application can only specify the signal strength after positioning the signal in the proper direction.

**IV. Results**

IOTbasedantennapositioningsystem for wireless network that allowsautomatic positioning of antenna as per user commands over the internet using ARDUINO.



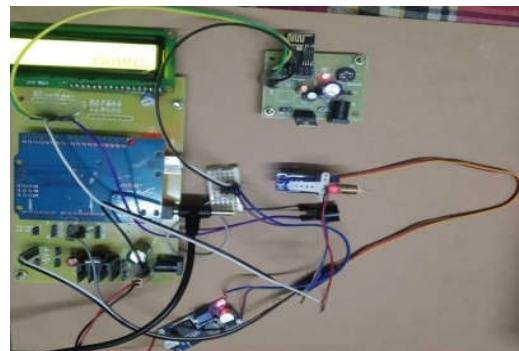**Fig.2Schematicdiagram**

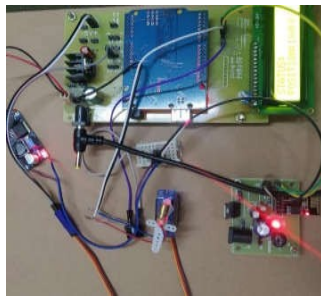BasedonusercommandPositioningofantenna is done at 0 degree.



**Fig.3Positioningofantennaat0degree**

Basedonusercommandpositioningofantenna is done at 180 degrees.
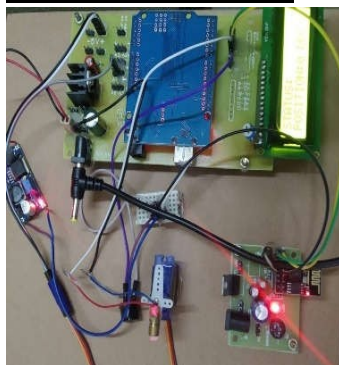


**Fig.4Positioningofantennaat180 degrees**

## VI. Conclusion

The IOT based Antenna Positioning System is used to positioned the antenna withouthandlingmanually,depending on the input received signal from teleet app. According to received signal we can change the direction of motors. The antennapositionismainlydependson the precision of thestepper motor in whichmotor can rotate clockwise oranti-clockwise. It is cost effective, compact in size. It is also user friendlyand remotely accessible.

## VII. References

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