Antenna Positioning Using IOT

P.Varalakshmi[1], Srilekha[2], Fayaz[3], Hari Sankar[4] and Praneeth[5]

[1]Guide, Department of ECE, Tirumala Engineering College,
[2,3,4,5]UG Student, Department of ECE, Tirumala Engineering College.

Abstract

All wireless communication systems work on antennas for transmission and reception of signals. Proper positioning of antennas is necessary according to satellites/transmitters to achieve effective communications. Here we propose IOT based antenna positioning system that allows remotely positioning of antenna. Here we use sensor-based system with motor on antenna. Positioning of antennas which are placed far apart is difficulty to do manually, this project will be highly useful for smart positioning. The antenna positions are visible over internet controlling operator on the IOT GUI.

Introduction

Iot is the emerging technology by means of which lots of automation is taking place. In wireless communication the antennas plays an important role. Proper positioning of the antenna is must for effective results. The position of antenna need to be changed if the requirement arises to move the antenna or corrected in case of any mis positioning. The task of positioning of antenna is usually done manually. In our project we are going to position the remote antennas by using Iot which helps us to control the antenna position from remote location.

Literature Survey

- A literature survey has showed that S. Godase and other authors introduces the system PIC microcontroller is used as a microcontroller in this system and it can be controlled by wireless device i.e. Bluetooth. To receive the signal from satellite the dish is used. Before the dish was manually adjusted and this project helps in adjusting the position of the dish through a remote Control. The microcontroller receives data from remote control and sends it to the motor through an interface.

- Another research P. Revan introduces a system in which IOT GECKO GUI is used. Using this GUI, the direction of the motor will be change and sensor will help to

detect its direction which is situated on the antenna. This project will help to detect the position as well as direction of antenna and the antenna is positioned according to new coordinates using GUI.

- Rahane Suraj Dildar proposed the idea to develop the system to position the antenna based on the microcontroller. The antenna can be monitored and controlled by the android. The antenna can be positioned with the help of servo motors. The servo motors position will be based on microcontroller.

- Pooja Revane, proposed that the internet of things being a fascinating and excited concept has one of the major challenging aspects of proper system for communication based on IOT. Along with IOT through sensors and actuators will also help the system to work. The controller handles the operation of the antenna. The Atmega328 low power 8- bit RISC controller is the main controller of the system for working of the antenna. The accelerometer will position the antenna.

Existed System

We deploy two antennas one is at transmitting side and the other is at receiving side for wireless Communication. Changing in position of antenna at transmitting station requires a change in antenna position at receiver end every single time it is a laborious work to change the position which is placed remotely. In existing system, tracking capability of a control system is critical. Antenna are controlled manually which is time consuming and accuracy was less. Place the antenna to the exact angle to obtain the full signal of a given frequency and it requires manual adjustment. Antennas are stationary and are not allowed to receive the signals which have gone the particular degree beyond the antenna is capable to receive the signal. Manually setting the antenna will leads to misalignment of the antenna position which leads to wrong reception of or may be no reception of signal. In majority of the

cases the direction of the signal is not stable so, in order to match the signal direction, we need to change the direction of antenna to receive the signal.Usually, antennas are

placed far away from residencies so it is a hectic and laborious work to change the positioning travelling quite amount of distance every time. This stands as one of biggest drawback.

Proposed work

To overcome the drawback in the existed system, we are proposing an Iot based antenna positioning system by using the components like NodeMCU, MPU6050, servomotor and a ready to use ubidots software Platform. The MPU6050 senses the co-ordinates of the antenna and sends information to the ubidots through NodeMCU Wi-Fi module. According to the information received we can simply change the position of the antenna through simple switching action from the ubidots app.

Block diagram
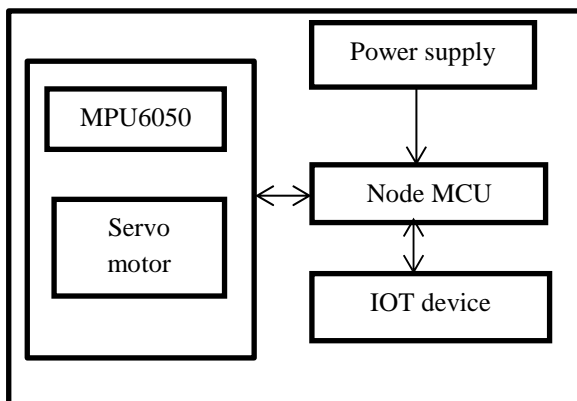
Future Scope

Many different adaptations, tests and innovations have been kept for the future due to the lack of time. As future work concerns deeper analysis of particular mechanisms, new proposals to try different methods or simple curiosity.

- The future scope of the project can be, one can feed the exact position in which the

antenna should be and if any fluctuation happens then, without help of remote controlling the antenna can detect the misalignment by itself and correct its position

Conclusion

The project mainly focuses on decreasing the laborious work in positioning of antenna which is highly helpful in this automation world. During the literature survey we got an opportunity to look closely into the problems that people are facing current environment. We reviewed multiple research papers out of which we taper down to ten papers and selected five papers as our base research papers. We analysed all existing architectures of our base papers and by understanding their working we have discovered some flaws in the currently existing system. We have kept all the prime features of existing systems as a primary focus with some of the additional features for our proposed system.

References

- Alan Bensky, "Wireless positioning and applications (Third edition)", British library Publications.
- Automatic Antenna Positioning system. M. Ilakkiya, S. Indhumati, B. Balakumar (UG), G. T. Bharathy(Senior assistant professor) department of electronics and communication engineering, Jerusalem college of engineering ISBN – 978-81-904760-89
- S. Katoch, H. Jotwani, S. Pani, A. Rajawat, "A Compact Dual Band Antenna for IoT Applications", published in IEE, pp1594-1597, 2015.
- Android Antenna positioning system S. Godse, P. Khatale, K. Nimgaonkar, L. P. Bhamare(assistant professor) department of electronics & telecommunication engineering, SVIT, India. ISSN(O) – 2395-4396, Vol-4, Issue- 2 2018.