Redtacton: A Human Area Network (HAN)

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Abstract

All the easy services desire technologies that offer communication between folks and objects in shut proximity. Our project describes a model of human space networking technology that permits communication by means that of the bit. We tend to enforced Redtacton technology for transferring information between two computing devices. Redtacton technology includes the employment of the chassis as a symptom path for communication. A transmission path is formed directly once an individual comes into contact with a terminal device, and communication between laptop terminals is begun. Here, the chassis is a channel providing 0.5 duplex communication at 10 Mbit/s. It uses a minute force field generated by chassis as a medium for sending the information. The device is in a position to send/accept the information in digital format on a bit, as we tend to bit the pc at sending and receiving finish the information can get transferred.

1. INTRODUCTION

In today's world, folks will communicate anytime, anyplace, and with anyone over a mobile phone. Also, victimization web anyone will transfer a sizable amount of attribute knowledge from the exterior . This technically advanced idealogy offers long distanced- exchange of data to the people. Many electronic gadgets, together with private digital assistants (PDAs), portable video games, and cameras supporting digital technology, have a reduction in numbers so that they will be taken around and used at the time once needed. This area unit will not carry numerous private or people's data and data exchange in routine tasks. Communication between electronic devices on the chassis and one's embedded in our everyday environments is additionally crucial. Therefore this has caused in-depth development and analysis of person body networks. Electronic devices with wired technology in body area networks area unit difficult and might simply happens to be intercepted. Wireless communication in a small area, systems like Bluetooth, and wireless native space networks have these quite issues. Overall output is reduced by packet collisions in a crowded area like conference rooms and theaters stuffed with folks, and communication isn't secure as a result of signals may be mixed. The most important disadvantage of infrared type of data transfer is that the strong directed beams between endpoints are required for the system to create an impression.

1.1. Previous Systems

We know about various infrared and Bluetooth wireless technologies, and many more in past years, these wireless technologies are very useful for instant data transfer through a wireless medium.

1.1.1. InfraRed (IR)

The IR wireless is that the use of wireless technology in devices or systems that convey knowledge through IR radiation. IR is magnetism energy at a wavelength or wavelengths somewhat longer than those of red light-weight. Prolonged exposure to infrared is harmful to the body. IR devices ought to conjointly to not be unbroken close to our body.

1.1.2. Bluetooth

Bluetooth is another short vary wireless communication technology that may be wont to transfer knowledge. However, Bluetooth has its disadvantages fond of it may be hacked into; if put in on a cell, it is susceptible to receiving mobile phone viruses. It solely lets short vary communication between two terminals; it will solely connect two hardware promptly, it will lose association inbound conditions, on the addition of a lot of devices the speed becomes slow

1.1.3. Wireless Fidelity (WiFi)

WiFi could be a cheaper wireless communication technology. A wireless fidelity setup consists of a wireless router that acts as a communication hub, linking the transportable device with a web association. This network provides an association of the many devices betting on the router configuration. These networks area unit restricted in

vary thanks to the low power transmission, permitting the user to attach solely inside short vary.

2. REVIEW OF LITERATURE

Here it includes numerous analyses and analyses created within the field of intrabody communication and, therefore, the results already printed, taking into consideration the assorted parameters of the project and therefore, the extent of the project. It offers clarity and a higher understanding of the project.

2.1 Data Transmission Through BAN, Mrs.

Swati A. Rathod, mister Dinesh D. Patil, International Journal for analysis in subject & Engineering Technology, Volume five Issue VII, July 2017 [1] To get a idea of Intra Body Communication they used the concept to use a human body as medium among mobile computing terminals with which a person is equipped. The concept of Personal Area networks (PANs) close to field intra-body communication was to demonstrate; however, electronic gadgets on and close to the human interface will exchange digital knowledge by electrical phenomenon coupling of currents through the body. The analysis tells that for intra-body communication (IBC), the carrier frequency varies sometimes varies from couples of kilocycles per second to couples of Mc; however, its rate may be as high as 10 Mb/s. Thanks to the special body channel characteristics, several IBC transceivers area units enforced with signals transmitted in basebands by direct-coupling to make sure a high rate. IBC becomes a larger well-liked strategy for smaller size and low power personal space interactions. To enhance the communication performance of galvanic coupling IBC severe gain variation and part non-linearity area unit achieved within the frequency response under the frequency of two hundred kilocycles per second. The analysis created on Galvanic coupling intra-body communication includes the formation of a network between little endpoints applied to the surface of the living body interface and bio-signal sensors installed inside the body. This is often to research the loss in a signal path throughout galvanic-coupling intra-human body communication of a personality's arm through the applying of a four-terminal circuit and a finite-element methodology (FEM) model, with special attention given to the come path.

2.2 Demonstrations and principles of IBC victimization electro-optic sensing element, Ai-ichiro Sasaki, Mitsuru Shinagawa, and Katsuyuki Ochiai, IEEE transactions on mensuration and instrumentation, 58(2), Feb 2009. [2]

To instinctively perceive the idea of IBC, they put forth an easy model talking concerning facts that chassis will close to be known as a wrapped conductor in associate nonconductor. To make them understand the property of the technology, they measured the features of inter-communication systems together with a personality's interface victimization, the Electro-Optical (EO) sensing element. The results after experiments well believe the assumed points from the model. The new EO sensing element apparently ridge type is shown to be superior to the EO sensing element one in the previous version, each of them with a stable and sensitive structure. With the EO sensing element, they succeeded in achieving a speed of 10-Mb/s knowledge transfer through the chassis. A vital EO feature sensing element is that the bottom conductor of the Electro-Optical Modulator (EOM) is high up floating and separated in isolation from the circuit of the receiver. Changes taking place within the potential of the circuit ground, which is named mode with the same noise, usually happens in bound surroundings. They stressed in this case, the voltage applied to the EOM is that the distinction in the signal and ground electrodes potential of the EOM; it does not rely upon the circuit's potential of the ground. That is why it is the potential to cut back the effect of noise with common mode. This is often a plus of victimization associate EO sensing element for communication through a human body as an interface.

Conclusion once reviewing totally different papers supported IBC, and human space network, we tend to come to a conclusion that:

- EO sensors area unit is terribly pricey to be enforced. This method offers to speed up to 10 Mbits/s, and it cannot be additionally improved. The speed of the information transfer may be improved by the victimization of the ideas of modulation and reception at the two ends.
- A personal space network (PAN) consists of two approaches electrical phenomenon coupling and galvanic coupling. In electrical phenomenon coupling, the induced current is not grounded between electrodes that induce unwanted noise and dropping of the signal.
- So it is necessary to use galvanic coupling that uses a fastening methodology, so the signal is regenerated on the receiving aspect with the assistance of electronic equipment. This method minimizes the value of construction as all parts area unit simply offered and cheap.

3. PROBLEM STATEMENT

The idea is to attain convenient communication by victimization chassis as a transfer medium.The idea is to make hardware on each causation and, therefore, the receiving finish together with a package that may be put in on the computers. Once there is a human interface in touch, the circuit is completed, and therefore the body acts as a medium of transfer for the information. Few of the options of our project embrace high and secure knowledge

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transmission, and the integrity of information. Therefore, the speed of the information transfer isn't affected even by the addition of a lot of devices.

4. PROJECT DESIGN

Two laptops: The design is constructed in order to exchange data between two devices. Where the computer serves as a device, a user interface has been constructed on the devices to exchange the data.

- Power supply: This unit consists of a transformer for power supply, rectifier, filter, and regulator. We are using Bridge Rectifier [five as a rectifier]. It converts 230 V AC into 5 V/12 V DC as required.
- Touchpad: It is a unit that provides the platform interface between the devices and the human body. When the hand touches the touchpad on each side, it exchanges data, and that exchanged or transferred data is visible on the other device.
- Amplifier: The device is used to increase the amplitude of the received signal in order to increase the strength of the signal. We are using LM358 for the amplifier. This unit takes +5 V DC for its working.
- LED: LED is used to indicate that the transmission process has started.

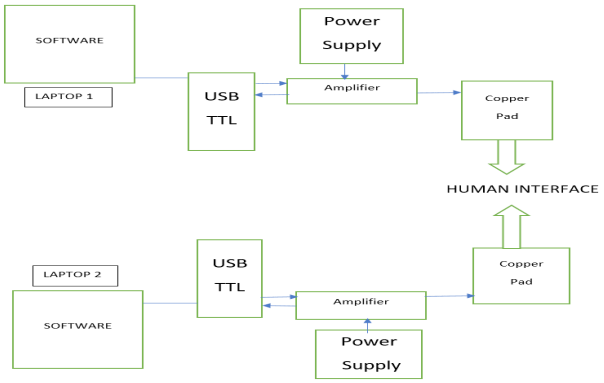

Fig.1

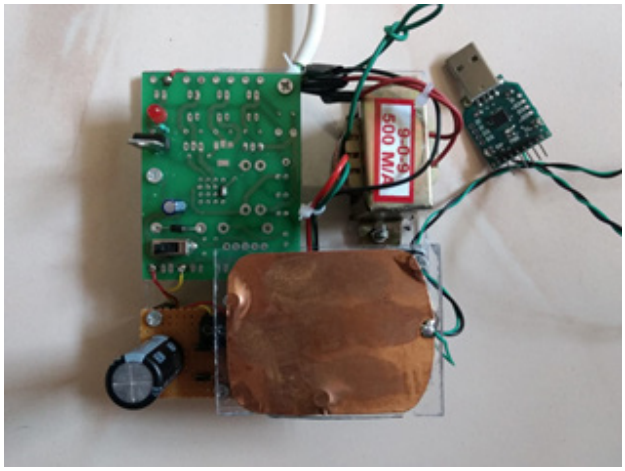

Fig.5.1: Transmitter circuit

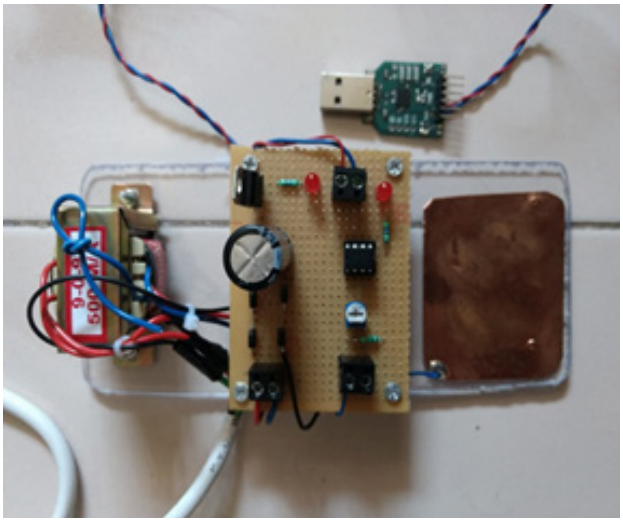

Fig.5.2: Receiver circuit

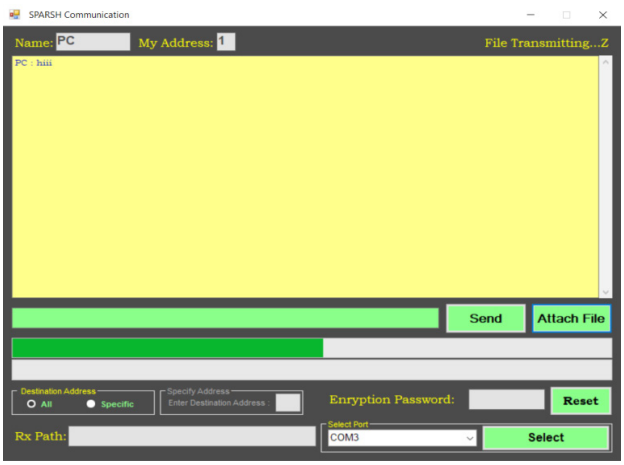

Fig.5.3: Port selection

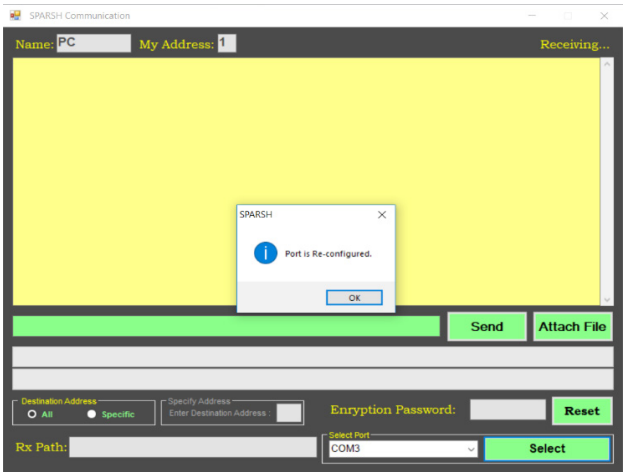

Fig.5.6: Transmitter side during sending

- USB TTL: It connects the designed hardware to computer devices through the port, which can be used to transmit/ receive data between devices and hardware.

5. HARDWARE IMPLEMENTATION

The hardware modules embrace the transmitter and receiver circuit, as shown in Fig 1 and , a pair of several. Within the transmitter circuit, input power provided is equipped by an electrical device once that the light-emitting diode can glow.

6. SOFTWARE IMPLEMENTATION

The software implementation includes different modules which are as follows:

6.1. Port Selection

When the USB TTL is connected to the laptop, the USB port is enabled, and it is shown in the dropdown. We first have to select the port and click on the "Select" button. The port will be reconfigured, as shown in Fig.5.3.

6.2. Sending and Receiving Text

If the user wants to send simple text message he/she has to write the message in the textbox, touch the copper pads at sending and receiving side and click on the "Send" button.

6.3. Sending and Receiving file

If the user wants to send a file (doc file, IMG file), he/she has to click on the "Attach File" button, select the file and click "OK." The progress bar at the transmitting and receiving side starts running unless the whole file gets transferred, as shown in Figs 5.6 and 5.7.

7. APPLICATIONS OF REDTACTON

- *Military Applications:* One potential application is gun security. Guns area unit is habitually taken from dead or wounded troopers so employed by the enemy. If a personality's space network transceiver were planted within the gun and programmed to a transceiver worn by a soldier, then solely that soldier may fireplace the weapon. There is conjointly the law enforcement agency that may sort of a methodology to forestall somebody taking their gun in an exceeding scuffle or somebody stealing their gun.
- *Marketing Applications:* Once a shopper stands before of associate marketing board, marketing strategies, and brand knowledge matching his or her attributes are directly displayed. By just a touch or coming before of things they are fascinated by, customers will get a great deal of in-depth knowledge.
- *Security:* Human space network can be put in on doors, cupboards, and different locations vocation for secure access, such every secure access can be initiated and documented with an easy bit. At the identical time, all the group action details and relevant user attributes (personal identity, security clearance, etc.) can be logged by the protection system.
- *Instant non-public knowledge exchange:* By touching or handshakes, profile details and knowledge may be exchanged between two devices carried by the people. Communication may be unbroken, non-public, victimization, authentication, and cryptography technologies. Diagrams drawn on whiteboards throughout the conference area unit transferred to personal mobile phones at the same time and place.

8. CONCLUSION

The project Redtacton—an individual's human network is associate with userfriendly technology that establishes a communication between computing devices in the nearer area. This project puts the fourth model of associate human house network technology that allows communication just by "Touch." This technology will remove the drawback of small-signal strengths, speed of data exchange and security measures, and problems on useless signal interruptions. The causing and receiving electrodes of the system's transceiver square measure coated with a protective film, that the body in the interface as a result of the transmission medium is completely insulated and safe. This application is concentrating on rising human portable computer interaction. The foremost advantage of the project is that it does not produce the use of any radio waves the smallest amount bit for data transmission. Over usage of frequency can be a significant concern recently. We have a tendency to tend to feel that the project will produce us learn technologies and broaden our horizon to a way higher level. In the meantime, the system beneath execution has limitations that can be overcome, and so the system is also enforced in daily activities.

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