



## **Touch Communication**

Transferring data through human body

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### **ABSTRACT**

Our project describes a model of human area networking technology that enables communication by touching, a technology we call Red Tacton. We are planning to implement this technology to enable printing just by touching the computer. Technology includes the use of the person body as a signal path for communication. A transmission path is formed automatically when a person comes into contact with a device and communication between mobile terminals begins. Here, the human body acts as a transmission medium supporting half duplex communication at 10Mbit/s.

Red Tacton technology was developed by NTT, Japan. It uses minute electric field generated by human body as medium for transmitting the data. The device will be able to send/accept the data in digital format on Touch, as in when we touch the computer the printer will print the respective file.

### **1.Introduction**

#### **1.1 Communication today**

In today's world, people can communicate anytime, anywhere and with anyone over a cell phone. Also, through internet people can download large quantities of quality data from remote locations. These technologies facilitate far-away communication for the users. Most electronic devices including personal digital assistants (PDA's), pocket video games and digital cameras have reduction in size, so that they can be carried around and used at the instance of requirement. These are used to carry various personal or public information and communications in everyday activities. Communication between electronic devices on the human body and one's embedded in our everyday environments is also critical, so this has driven extensive research and development on human area networks. Wired connections between

electronic devices in human area networks are messy and can easily become entangled. Short range wireless communication systems such as Bluetooth and wireless local area networks have some problems. Throughput is reduced by packet collisions in crowded space such as meeting rooms and auditoriums filled with people and communication

is not secure because signals can be intercepted. The principle drawback of infrared communication is the tight directionality of beams between terminals is needed for the system to be effective.

#### **1.2 Intra Body Communication**

The ultimate solution to all these constraints of conventional technologies is "intra body" communication, in which the human body serves as the transmission medium. If we could use the human body itself as a transmission medium, then this would be an ideal way of implementing human area networks because it would solve at a stroke all the problems including throughput reduction, low security and high network setup costs Once developed there would be plenty of applications where we can implement this technologylike in our project we would be trying to integrate this technology to transfer our file to the printer just by touching the computer. This would be a boom to the human computer interaction concept.

[1]

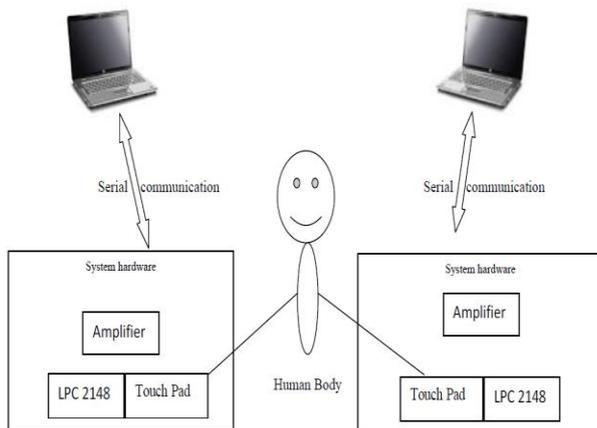


Figure 1. Intra Body Communication

## 1.2 Overview:

The basic idea is to achieve seamless communication by using human body as the transfer medium. The idea is to develop a hardware on both sending and the receiving end along with a software that will be installed on the devices. Whenever the two devices wish to communicate, just as we turn on Bluetooth, we just touch the system at the sending and the receiving end.

When there's human body in contact, the circuit is complete and the body acts as a transfer medium for the data. This happens (and is completely safe) because our body houses weak electric field and taking advantage of that, the transfer of the data takes place.

Now because of earthing, the signal becomes weak and data may not be able to reproduce at the receiving end. But this is completely taken care by having an amplifier at the receiver which amplifies the signal so that data is intact. Giving a thought to safety factor, this is completely safe for the human body since the signal sent will be of very small voltage.

### Process (Data transfer):

1. Select the option start sending at the application window
  2. Touch the device at the senders end
  3. Touch the device at the receiving end
  4. The data will appear at the receivers application window and data transfer is complete
- One of the major advantages over existing systems is that it does not need the radio links which all the systems till now do.

Secondly since human body is the medium, connection achieved is dedicated which results in higher data transfer rates. Transfer speed is also much higher than other technologies.

For the development part: two interfaces need to be developed, one for each end of the communicating systems. Selecting the file to be transferred from one of the interface, the file will start transfer as soon as the touchpad is touched.

### Main Components of The System

The following are the brief explanations of the various major blocks or sections used in the system...

- **Personal Computer (PC)**

We have designed a system to transmit data between two handheld devices. Here we have chosen computer as a handheld device. A Graphical user interface has been created on the computer to send and receive the data. For creating GUI, Microsoft VB.Net platform is used.

- **ARM 7**

This unit is the heart of the complete system. It is actually responsible for all the process being executed. It monitors & controls all the peripheral devices or components connected in the system. The controller here used is of LPC21XX family, i.e LPC 2148. This unit requires +3.3VDC for its proper operation. For its functioning, code is written in Embedded C and burned or programmed into the code memory using a programmer.

- **Power Supply**

This unit supplies the various voltage requirements of each unit. It consists of transformer, rectifier, filter and regulator. The rectifier used here is Bridge Rectifier. It converts 230VAC into desired 5V/12V DC.

• **Touch Pad**

This unit is used to provide the connection between the system designed and the body. When the person touches the touch pad on both the side it transfers the data from one end to the other end and that transferred data displayed on the computer screen.

• **Amplifier**

This is the device which is used to amplify the received signal to increase the strength of the signal. Here we are using LM358 as amplifier. This unit requires +5VDC for its proper operation.

• **LCD**

LCD is simply used to acknowledge the beginning of transmission process once it started.

• **USB**

It is used to connect the one of the port of computer to the designed hardware to transmit/ receive data between computer and designed hardware.

• **Body**

Finally its human body which is used as an innovative media to transfer data between devices.

**4.1.2 Technology & Programming Languages:**

As ARM Controller is the core of these days digital circuit design in industry, this system uses it for the centralized operation and digital processing. The technology used here is embedded technology which is the future of today's modern electronics.

The following are the various programming language & technologies that we have used in the proposed system :

For Embedded System :

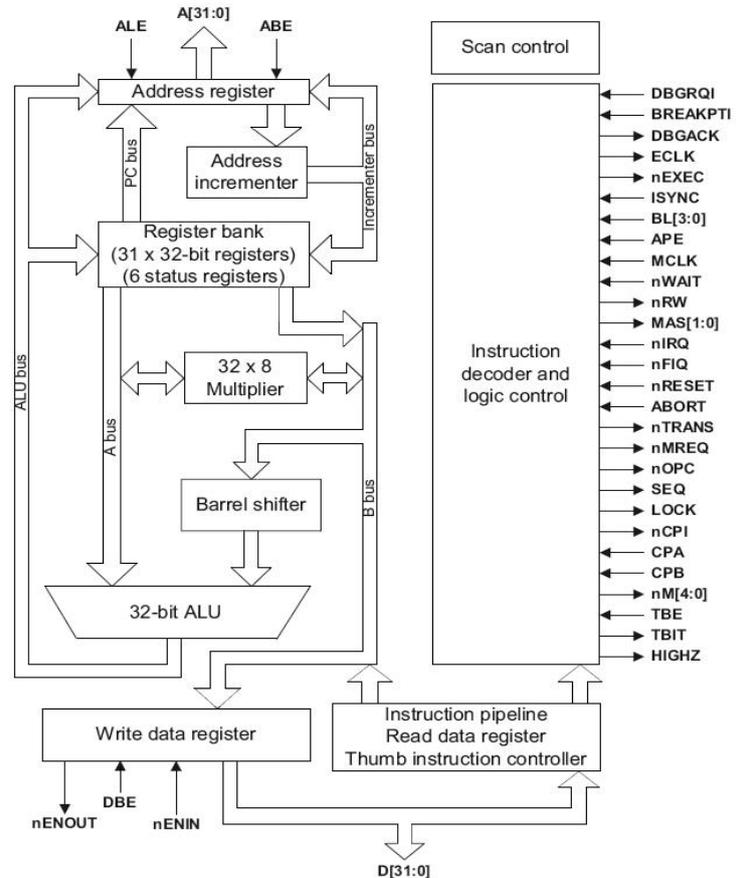
- Embedded Technology
- ARM based Controller i.e. LPC 2148
- Eagle 5.10.0 Software for PCB designing OR LiveWire1.11 pro
- Embedded C – Kiel Compiler

For PC :

- Microsoft Visual basic 6.0 application software
- Serial Communication Protocol

**2. Hardware Required:**

The hardware components used for system are as follows:



**2.1 ARM 7**

**Figure 2: ARM 7 controller with Pin Diagram**

## 9. Conclusion

We believe this idea will prove to be a new, innovative. We firmly believe that the implementation of the project will be smooth as it is expected to be in accordance with the detail study of our project that we have achieved till this stage. The various modules and their detailed design studied above will help define our project's implementation and provide strong base for developing the various modules practically.

## 10. References

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