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Wireless Data Transfer and Printing Utilizing Raspberry Pi

SURESH BALLALA¹, EPPA AKHILA², P.RENUKA³, DR. I. SATYANARAYANA⁴

¹Professor & HOD, Dept of ECE, Sri Indu Institute of Engineering & Technology, Hyderabad, TS, India, Email: ecehod.siiet@gmail.com.

²PG Scholar, Dept of ECE, Sri Indu Institute of Engineering & Technology, Hyderabad, TS, India, Email: akhila.reddy27@gmail.com.

³Asst Prof, Dept of ECE, Sri Indu Institute of Engineering & Technology, Hyderabad, TS, India, Email: renukasree435@gmail.com.

⁴Principal, Sri Indu Institute of Engineering & Technology, Hyderabad, TS, India, Email: principalsiiet@gmail.com.

Abstract: Previously the common procedure for printing the data is either by using desktop computer or notebook, by first connecting the mobile device to either of the devices, extract the data and then by selecting the exact printing method send it to printing device, which becomes so much burden on the process. In this paper, an architecture using a strategy called Raspberry pi is proposed to print the stored data directly from the mobile device without support of a desktop or a notebook. The design strategy encompasses the Debian flavor of UNIX based Raspberry pi. A Raspberry pi is a single-circuit costless electronic device, which is used popularly in Bluetooth communications. A printer driver software is used to control the printer and CUPs installed on RPi do the printing task, where as a configured Bluetooth dongle accept the data stored in the mobile device and send it to RPi.

Keywords: Printer Drivers, Unix, Raspberry Pi, Printer, Mobile Device, Computer Devices, Bluetooth.

I. INTRODUCTION

By the development of technological resources, peoples living conditions become comfortable and very easy, in doing their work. Data printing becomes a task in day to day life of a human. For this we propose a design which prints the data from mobile device Bluetooth technology. Hence, we need a mediator among mobile and printer[3]. Here the adapter works on two different strategies, the first one is printing the data from data supply device is received by wireless communication, before receiving the data completely, and the second one is printing the data from data supply device is received by wireless communication, after receiving the data completely. In both modes a wired communication is used to print the data. Using an adaptor print job is done in a printer device. The stored data in a device sends the data to printer adapter[1]. There are two interfaces for communication is established. The adapter's first interface is configured to communicate with printer using first communication protocol, and the second interface is configured to communicate with the data supply unit using a second communication protocol[4]. And also there are two printing modes. In a first operation mode, the image data is received from data supply unit using second interface, and the print job is issued to print the data by first interface of the adapter, before completion of receiving data.

In a second operation mode, the image data is received from image supply unit using second interface, and the print job is issued to print the data by first interface of the adapter, after completion of receiving data. But in this a selection control is to be configured to opt operation modes, and a switching unit is required to switch between the operational modes based on the selection control[2]. The operational mode selected by the selection control depends on at least one among these, a file name, an image format, transfer time and add-on information of the image data. Hence, the main objective of the proposed scheme is without using computer the stored data can be print directly from mobile device to printer device. It becomes easier to print data from mobile phones, laptops, personal computers through wireless communication.

II. STUDY OF PREVIOUS RELATED WORK

In the rapid emergence of technology, the term “complexity” reflects everywhere, whether it is household appliances, office automation system, multimedia and entertainment sources or medical equipment where “connectivity” and “button touching” guarantees the compliance of desired process. And this “complexity” is due to the “merging” of technologies. This will change the life of the people to work easily and comfortable. Among one of the aspect is printing. In the traditional printing, printer requires mobile device as input device, LAN connection and the printer as an output device and it becomes sophistication. The objective is to print mobile stored data directly to printer device without using computer, and using wireless. We can print mobile data using mobile's Bluetooth technology.

III. SYSTEM ARCHITECTURE

A. Connecting Mobile and Printer using Wi-fi

Here, using a Bluetooth dongle as a receiver's wireless module, which receives the signals from mobile device and transfers to controller. The controller's memory unit saves the data temporarily and sends to the extraction system, since it retrieves the data and compiling unit convert it into a format of the printer. By using USB media printing is taken place.

B. Importance of Raspberry pi

This Raspberry pi is a card sized and cheapest computer model, which includes a 700MHz processor, an HD Graphics, and 128MB of Min., memory. And it also contains a memory card slot, AV to connect TV and a USB port for input devices, and consumes a little power. In this we can install OS and do many operations.

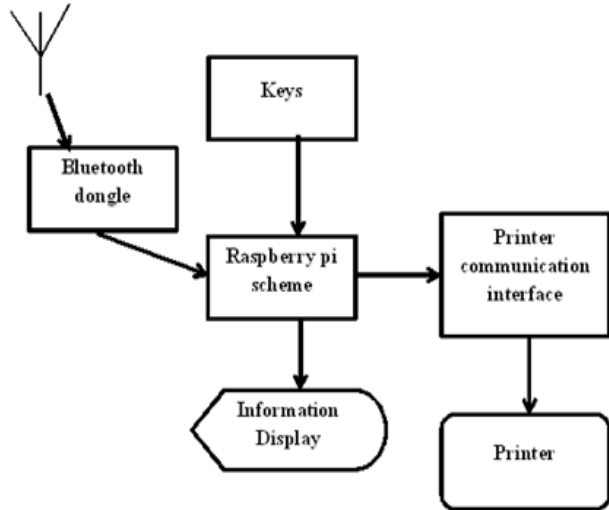


Fig.1. Proposed System Architecture.

C. Description of modules

The proposed Wi-fi/USB printing converter, receives data from Bluetooth dongle and it can be sent directly to a printing device without assistance of computer. This is modularized and explained in the following sections.

i) Transmission via Bluetooth dongle Module: In this Bluetooth dongle is designed as a receiver, and it receives the information transmitted by Bluetooth supported devices such as PDAs, Mobile phones, and Laptops.

ii) Processing unit Module: This will connects the transmission module and contains an abstraction system, a memory unit and a compiling unit. The memory unit, temporarily stores the image data, and the abstraction system retrieves the information to be printed from the transmitted image data by Bluetooth device. While, this retrieved information will be converted into printing format based on a picture bridge protocol. This protocol is a latest development in the printing industry; it has the capabilities of data transmission between the various types of electronic gadgets and printing systems.

iii) USB communication Module: With the USB port of the printing peripheral, which is connected to the processing unit through a communication cable. It transmits the printing data given by the processing unit to the printing device and printing can be done.

iv) Security/Protection Module: An electrically designed system is placed into the processing unit and the USB communication module, to prevent the electric power surge due to the transmissions to the processing unit, which causes damages. The Bluetooth transmission module continues to detect the data transmission status of the electronic device.

Once the electronic product starts to transmit data, the system receives data from the electronic device by using the Bluetooth transmission function and temporarily stores the data into memory unit. If the data reception is incomplete or the format is incorrect, the system returns to receive another set of data or request new transmissions. If the format of the data is correct, the extraction unit retrieves the data to be printed from the data system, compiling unit converts the image information to be printed into printing data according to the picture bridge protocol.

IV. CONCLUSION

Generally printing the data is assisted on either desktop computers or laptops. So, if we want to print the mobile store data then first we need to connect either of the devices and copying it into the device’s memory unit and send it to the printer device. This is a tedious and time consuming. In this paper we propose costless Bluetooth to USB data converter, which is used to print the mobile stored data directly to the printer device without assistance of computers. This is a time saving and costless strategy in printing technology.

V. REFERENCES

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Author’s Profile:



Mr. Suresh Ballala is presently working as Associate Professor & HOD of Electronics and Communication Engineering in prestigious Sri Indu Institute of Engineering & Technology, Hyderabad, India. He obtained M.Tech in Digital Electronics and Communication Systems from JNTUH. B.Tech from Basaveshwara Engg College, Bagalkot, Karnataka University. He won Third prize in a seminar contest organized by Asia pacific telecommunications young professionals and students forum, Ministry of Information Technology in association with BSNL at IETE-. From last 17 years he is guiding the students in Enhancement of Embedded Systems.

Web Based Embedded Door Access and Home Security System Based On Face Recognition



E.Akhila M.Tech student Scholar presently pursuing M.Tech Electronics and Communication Engineering in prestigious Sri Indu Institute of Engineering & Technology, Hyderabad, India.



Ms.P.Renuka is presently working as assistant professor Of ECE department in prestigious Sri Indu Institute Of Engineering & Technology, Hyd, TS, India. She Obtained M.Tech & B.Tech from JNTUH .She published 2 papers in international journals. Since 2 year she is guiding the students in enhancement of Electronics & Communications.



Dr. I. Satyanarayana is presently working as Principal in prestigious Sri Indu Institute of Engineering&Technology, Hyderabad, India. He obtained Ph.D from JNTUH, Hyderabad, India. He obtained M.Tech from IIT-KGP. From last 18 years he is guiding the students. He is also a member of FIE, MISTE, and MISHMT.