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Overview of Raspberry PI

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A B S T R A C T

Raspberry Pi is very strong. The small computer with the dimension of a credit card was invented with the hope of motivating a generation of students to be creative. The raspberry pi contains a Broadcom BCM2835 system on a chip (SoC), a processor of ARM1176JZF-S 700 MHz processor, video-core IV GPU, and was originally it has 256 megabytes of RAM and later it is upgraded to 512 MB. The data from input sensors is then read by the server which is raspberry Pi itself and stored in CSV. The data of various environmental parameters are gathered from the sensors where Raspberry Pi acts as a base station. Raspberry Pi then transmits the data using wi-fi and processed data will be displayed on the laptop by accessing the server that is on the receiver side. The review paper explains and gives knowledge of raspberry pi technology, a very powerful computer. Also, it introduces the overall system architecture and the design of hardware components is presented in detail. It supports python which is the major programming language for functioning and coding. It also supports BASIC, C, C++, JAVA, Perl, and Ruby languages. This is overall the knowledge about raspberry pi.

Keywords: Credit card, Raspberry pi, Broadcom**.**

1. INTRODUCTION

Raspberry Pi is a small single-board computer it is originally developed by the Raspberry Pi foundation and the organization called BROADCOM. The size of the Raspberry

Pi is a credit card. The first motive for the Raspberry Pi was to the teaching computer science for studies and to develop the countries.

The original model becomes popular among other devices, it increases the selling outside of the target market that uses such robotics. Because of its low cost, modularity, and open design, it is used in wide-area such as weather monitoring. It has Most electronic hobbyists use this Raspberry Pi since it adopted HDMI and USB connections. It can be plugged into a TV or any monitor device. This Raspberry Pi can do many of the things that the average computer does such as it provides spreadsheets, word processing, games, and playing high-definition video and audio.Most electronic hobbyists use this Raspberry Pi since it is adopted for HDMI and USB connections.Raspberry Pi is a microcomputer. The size of the circuit board is approximately 9cm x 5.5cm.

After the second board was released, it set up a new commodity called Raspberry trading, and installed Eben Upton as CEO, with the responsibility of developing technology. Most of the Pi's are made in the SONY factory at pen coded, and wales and other parts are made in china and japan.

Supports and conducts free and open-source Linux Os, Great learning tool, computer, embedded Linux, etc…

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2.RASPBERRY PI

The first generation is RASPBERRY PI MODEL B has been released in February 2012, and after that MODEL A has been released

In 2014, the board design was improved and they name it RASPBERRY PI MODEL B+.

The features of these first-generation:

It contains board ARM11 processors that are approximately credit-card sized represent the standard mainline form-factor

later on, the foundation has been released MODEL A+ and MODEL B+

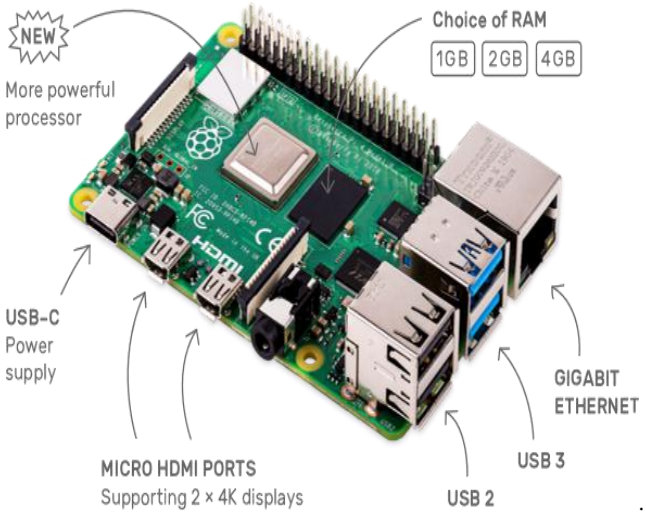

Fig.2.1 Raspberry pi

"Computer Module" was released in April 2014 for entrenched applications.

The Raspberry Pi 2 which was released in February 2015

The Initial features of Raspberry Pi2 :
Initially it contain a 900 MHz 32-bit quad-core ARM Cortex-A7 processor with 1 GB RAM.

After modification of the features of Raspberry Pi2:
Then it is modified to a processor of 900 MHz 64-bit quad-core ARM Cortex-A53 which is the same as that in the Raspberry Pi 3 Model B, but downclocked to 900 MHz

After Raspberry Pi, 3 Model B was launched in February 2016:
The features of Raspberry Pi 3 Model B are:
It is the processor of 1.2 GHz 64-bit quad-core ARM Cortex-A53 onboardedard 802.11n wi-fi, Bluetooth and USB boot capabilities.In 2018,

Raspberry Pi 3 Model B+ :
It has a faster 1.4 GHz processor and a three-times faster gigabit Ethernet 2.4 / 5 GHz dual-band 802.11ac Wi-Fi Other features are Power over Ethernet (PoE) USB boot and network boot.
Next year the Raspberry pi 4 model B has been launched:
1.5 GHz 64-bit quad-core ARM Cortex-A72 processor,onboard 802.11ac Wi-Fi,Bluetooth 5,
full gigabit Ethernet, two USB 2.0 ports, two USB 3.0 ports, 1–8 GB of RAM, and the dual-monitor support via a pair of micro HDMI with the improved Broadcom BCM2711C0.

In 2020 they have launched a new model called Raspberry Pi 400.

3.RASPBERRY PI BOARD

Broadcom 2835 700MHz chip in which CP a core is a 32 bit ARM1176JZF-S RIS a processor designed by advanced RIS machines are used in the main signal processing chip unit in the raspberry pi system. A camera and the display is connected through this main processing chip. Raspberry pi is used as an SD card for long-term storage. The Linux Debian is used to run in this board based on theoperating system. This board contains Samsung class 4 micro SD card preload with the Raspberry pi NOOBS package and a printed
Micro SD card adaptor.

Fig.3.1 Raspberry pi board

4. METHODOLOGY OF RASPBERRY PI

The raspberry pi board is the main controller which is used in the method. All the necessaryhardware components and switches on the power supply should be connected after installing the OS to the board. Then raspberry pi gets login by username and password when it starts booting the board. It works on the Linux Debian archoperating system. It mainly works on the python software. Using the commands in the terminal window to check the network settings to update the python software. To implement the proposed the following packages should be installed:

- Sudo apt-get install python-matplotlib
- Sudo apt-get install python-numpy
- Sudo apt-get install python-script
- Sudo apt-get install python-imaging

Once the installation of packages is done. Enable the camera setting on the board to capture the pictures. These pictures are saved in the folder. Run the python code to check the algorithms. At last, removes the noise present in the picture. From this, we get to know about the procedure of saving the picture and what the packages are to be installed?.

They proposed the certain algorithms to be implemented the methods:

- Start the process
- To the SD card install the Raspberry pi OS
- Connect the hardware and switch on the supply
- Login to the board
- Check for the network setting
- Enable the camera
- Capture the image you want
- Run the code in python
- Check for the enhancement algorithm
- End the process

A basic embedded system is the raspberry pi, which is a low-cost single-board computer. In real-time applications, it helps to reduce the complexity of the system. To interface, the raspberry pi camera raspberry pi consists of a camera slot interface. To identify the particular region of the image the dark and low contrast images are captured by using the raspberry pi module.

3.CONCLUSION:

The raspberry pi is a great platform that is low- cost but the performance of the Raspberry Pi is high. From this, we get to know that it is a beginner-friendly device that the programmer can easily code on it. The special advantage is that it can capture the picture accurately that pictures were stored in the folder. The RaspberryPi can perform by coding python, ruby, and HTML5.

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