Raspberry Pi For Ease of Technology

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Abstract- *Raspberry Pi with its series can promote teaching of basic computer science in schools and colleges. To make the computing easier use the Raspberry Pi and understand the difficulty this mini chipboard has resolved in the field of security, safety, managing of tasks at low-cost. This paper describes the method of recognizing it in real-time. IOT based theft detection using Raspberry Pi could be achieved. Here image processing could be used for live video to detect theft using motion and techniques, can highlight the area where motion occurred.*

Keywords*-Security, Raspberry Pi, Linux, Low-Cost Computing*.

I. INTRODUCTION

Prevention from theft and the wastage of time due to wait re issues. It is necessary to implement a computing environment that is affordable and long-lasting. Raspberry Pi is a multi-purpose, low-cost Advanced Reduced-Instruction-Set-Computer. Manual attendance has human error. Face being recognised is the proof for any human. For this automating the attendance process will increase the productivity of the class. Internet of (IOT) has been governing the electronics era with cloud services dominating the ever-increasing electronics product segment and face recognition system, image processing is used for these problems.

This paper outlines the results of research into the test-bed setup of low-cost computing environment using Raspberry Pi. Section 2 contains a review of literature, including related previous work. Section 3 with components Section 4 includes configuration Section 5 having adv/disadvantage following with Section 6 of conclusion.

II. LITERATURE REVIEW

The Raspberry Pi is considered a low-cost, credit-card sized computer that plugs into a computer monitor or TV, and uses a standard keyboard and mouse. Capability of this little device enables people of all ages to explore computing, and to learn how to program in languages like Scratch and Python. This miniature device can be used for robotics, arcade machines, and temperature probing devices. It can also be used for MATLAB applications, among others, and comes in a variety of models with different interfaces for different requirements.

According to Author Jon Brodkin, the module of the computer is getting upgraded which provides ten times CPU performance. And there have been many modules released which provide better functionality and prices also vary accordingly. When we compare the raspberry pi with other microcontroller and technologies like Ardiuno or Akash it provides vast range in case of language support, is more compact good for performing multiple tasks, for driving complicated robots and provides customization facility.

Security and theft protection are issues according to Pragati Ukey, Raspberry pi could be used with combination of BLYNK App having proper OS and SD card as role players used to keep an eye on the house for various purpose providing the switching ON/OFF facility. And so, this mini clip board is self-contain security device capable of providing security at low-cost. Raspberry Pi with the combination Of IOT can also be used where the image processing is done using the Haar Classifier, Open CV for real-time computer vision, IR Sensors for sensing the motions and the software with Linux Embedded OS provides all together what required for theft detection according to the Author Umera Anjum.

According to Author D. D. Ahire, Raspberry Pi with IOT can also be used for automation for industries by considering it as a server and controller. The data is collected and used by the frameworks for monitoring the tools and the damaged parts of machines using internet, power supply, cutter tools and the web page. Also, as a performance improvisor, application developer and a usage guide Raspberry Pi with master, worker & storage nodes deliver the functional system according to author J. Parker Mitchell. And this is how various research is going to improve the experience of computing at low-cost with the help of Raspberry Pi.

III. COMPONENTS OF RASPBERRY PI

For ease to the functionality different components are present on the small board which include:

1. ARM CPU/GPU a Broadcom SoC (System on chip)
2. GPOI for general purpose Input/output
3. RCA jack
4. Audio output
5. LED
6. USB port
7. Power
8. SD card slot
9. HDMI connector
10. Ethernet for wired N/w access

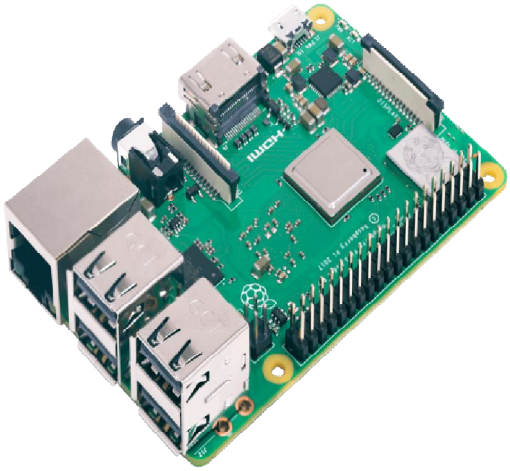

Fig 1. Raspberry Pi

IV. QUICK CONFIGURATION OF RASPBERRY PI

It includes five easy steps:

1. You would require to reformat the microSD card
2. NOOBS for setup requirements have to be downloaded in this microSD card
3. Setting up of the Raspberry Pi
4. Download Raspbian OS on Raspberry Pi
5. Configuration of Raspberry Pi

V. ADVANTAGES AND DISADVANTAGE

Installation as an OS of Raspberry Pi and using it for daily basis computing could be considered as the advantage. Another one includes using the Raspberry Pi to connect with different components and devices easily to provide a wide range of functionality.

It has limitation in running some Operating System such as X86 and some apps or program require high performance of the CPU.

VI. CONCLUSION

The Raspberry Pi is a powerful, compact and a great platform for building low-cost and highly capable embedded systems. GPIO connector has the interfaces built-in which make it easy to bolt the modules on using simple low-cost electronics. A bit of configuration required to create very functional and flexible systems. By just including camera interface and networking interfaces it gives everything possibly need for an Internet-connected home security system. Summing up the knowledge that how raspberry pi can bring about a change in world of computing.

REFERENCES

[1] Upton, Eeben (14 March 2018). "Raspberry Pi 3 Model B on Sale at $35". Raspberry Pi Blog. Raspberry Pi Foundation. Retrieved 2018-05-04.
[2] Callan-Jones, Rory (5 May 2011). "A £15 computer to inspire young programmers". BBC News.
[3] Brodkin, Jon (16 January 2017). "Raspberry Pi upgrades Compute Module with 10 times the CPU performance". Ars Technica. Retrieved 16 January2017.
[4] Cloutier, Michael, Chad Paradis, and Vincent Weaver. “A Raspberry Pi Cluster Instrumented for Fine-Grained Power Measurement.” Electronics 5, no. 4 (September 23, 2016). doi:10.3390/electronics5040061.