# A HIGHLY RELIABLE FM TRANSMITTER USING RASPBERRY PI

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## ABSTRACT:

*FM is used as a powerful transmitter. FM radio band is decided for the radio transmission; any contemporary mobiles can be used for the social occasion of the signs subsequently making it straightforward for the group of onlooker's individuals to tune into the channel without revealing any extra cost. Here we are designing a campus FM that can cover up to the organizational level. By using this campus FM students can make advantage of giving announcements with in campus or any important news. It consists of FM station that can be controlled and maintained by either students or the organizational members. It provides a path for the students to explore their talents in various streams. This proposed system of FM transmitter is established by using raspberry pi board. Here the Pi board acts as a server as well as FM transmitter. By using this PI board the cost is reduced to great extent which allows a platform of webcasting of radio. Small antenna with low RF is used as the FM radio is using within the campus. This FM requires very low voltage as the PI board consists very low voltage. This FM can be accessed through web also.*

***Keywords:*** *Raspberry Pi Board, FM Transmitter, Web Casting, Antenna, Raspbian Operating System.*

## INTRODUCTION:

Campus Radio (also known as college radio, university radio or student radio) is a radio station that is run by the students of a college, university or other educational institution. It provides an opportunity for the students to exploit their talents in various fields via FM radio to the audience comprising of students and staff of a college. One of the major advantages of having such a communication media is, important information regarding various curricular, co-curricular and extra-curricular activities can be broadcasted and the students as well as the staff can tune in to the FM station, receive notices and hence information can be conveyed in a different style. Campus Radio here is mainly designed to make use of radio, especially FM, in a more realistic and meaningful way to broadcast important college notices. Campus Radio introduces the new aspect of using radio for college audience as well as allows students to showcase their talents during free hours of the college that in turn helps them in exhibiting their skills and get encouraged. Also with web Cast anyone around the world can listen to Intellectual Output of the College Students. Campus radio is a radio service offering a third model of radio broadcasting in addition to commercial and public broadcasting. They broadcast content that is popular and relevant to a local, specific audience but is often overlooked by commercial or mass-media broadcasters. Community radio stations are operated, owned, and influenced by the communities they serve. They are generally nonprofit and provide a mechanism for enabling individuals, groups, and communities to tell their own stories, to share experiences and, in a media-rich world, to become creators and contributors of media. It is used for the students to showcase their talents during free hours of the college that in turn helps them in exhibiting their skills and get encouraged.

In many parts of the world, campus radio acts as a vehicle for the community and voluntary sector, civil society, agencies, NGOs and citizens to work in partnership to further community development aims, in addition to broadcasting. There is legally defined community radio (as a distinct broadcasting sector) in many countries, such as France, Argentina, South Africa, Australia and Ireland. Much of the legislation has included phrases such as "social benefit", "social objectives" and "social gain" as part of the definition. Campus radio has developed differently in different

countries, and the term has somewhat different meanings in the United Kingdom, Ireland, the United States, Canada, and Australia, where freedom of speech laws and defect to realities differ.

**INTRODUCTION TO PROPOSED SYSTEM ESTABLISHED:**

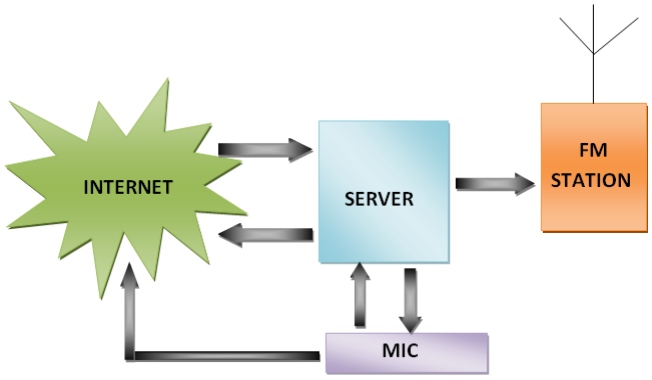



**Fig2: Workflow of System**

The above diagram shows the abstract view of the established system. The Community or Campus Radio Station of college is established at minimal cost. The Main server will be on Raspberry Pi attached to external Media center where all media files are being stored in an organized manner. To enable webcasting of college radio over the internet different casting servers(Apache, Ice Cast, SHOUT Cast) are being installed on pi, and other web technologies are used to make it accessible over the internet in efficient way.

**RASPBERRY PI BOARD:**

The Raspberry Pi is a series of credit card-sized single-board computers developed in the United Kingdom by the Raspberry Pi Foundation with the intent to promote the teaching of basic computer science in schools and developing countries. Dual step-down (buck) power supply for 3.3V and 1.8V. 5V supply has polarity protection, 2A fuse and hot-swap protection[7]. New USB/Ethernet controller chip. 4 USB ports instead of 2 ports. 40 GPIO pins instead of 26. The top/first 26 pins match the original layout, 9 additional GPIO and 2 EEPROM Plate identification pins. Composite (NTSC/PAL) video now integrated into 4-pole 3.5mm 'headphone' jack. MicroSD card socket instead of full size SD. Four mounting holes in rectangular layout . Many connectors moved around. Same basic size, 85mm x 56mm. Same Processor, Broadcom SoC running at 700MHz (can be overclocked). Same RAM, 512MB soldered on top of the Broadcom chip. Same power connector, microUSB. Same software - identical operating systems will work fine, just make sure you have versions that are later than June 2014. First 26-pins of GPIO are the Same. Audio part of the A/V jack is the same[8].

**RASPBERRY PI AS SERVER:**

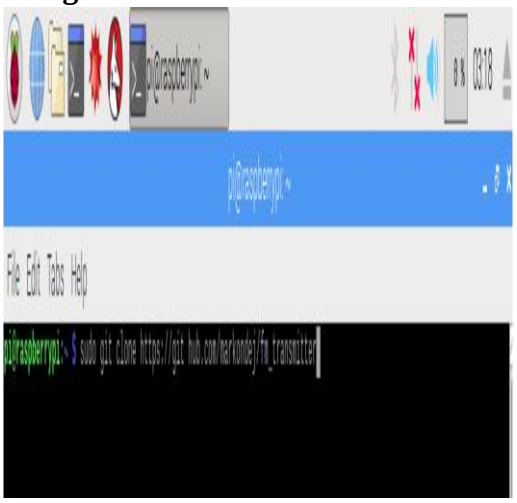
Apache us a popular web server application you can install n the Raspberry Pi to allow it to serve web pages[6].On its own, Apache can serve HTML files over HTMP, and with additional modules can serve dynamic web pages using scripting language such as PHP. There are only three steps to follow this Apache.

- Install Apache.
- Test the web server.
- Changing the default web page.

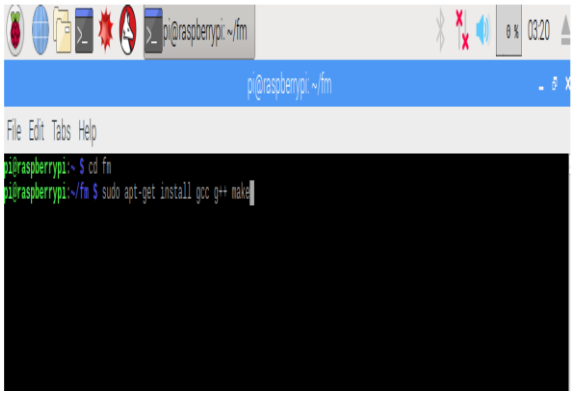
**RESULT:**

Raspberry pi itself acts as a FM transmitter and server. The design of FM transmitter includes configuration of raspberry pi with proper commands.

**The inputs for fm transmitter can get by using the command**



**To compile the entire system, the command we used is**



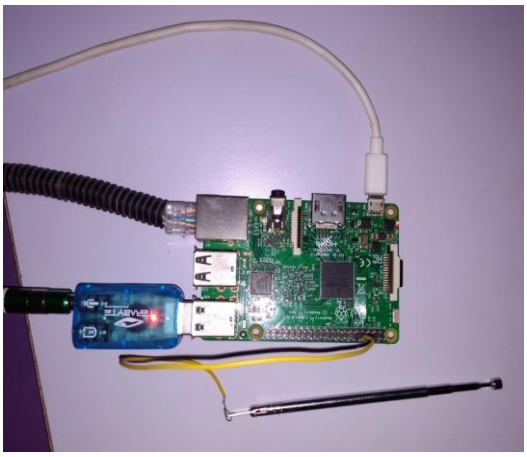



**Fig5: Raspberry pi as a FM transmitter**

## CONCLUSION:

The proposed system can be more useful in organizational level and campus level. raspberry pi as fm transmitter provide students with a platform to communicate with all other students and provide a wider audience and training opportunities for students interested in mass media. It is most effective and low cost fm transmitter than present fm transmitter. The frequency must be selected by taking necessary permissions The proposed system works within a short range.

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