



An Enhancing health care with Li-Fi Kit Using Internet of Things (IoT)

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Abstract This manuscript shows the patient inspection framework utilizing Li-Fi innovation. Li-Fi represents Light Fidelity. Li-Fi innovation planned via the German Physicist Harold Haas, gives broadcast of information through enlightenment by sending information through fluctuates power quicker than natural eye can follow. Li-Fi is a bidirectional, fast as well as entirely organized remote optical correspondence and is a sort of apparent light correspondence. The planned replica aides in patient observing in medical clinic and should be possible via utilizing the idea of Li-fi rather than Wi-Fi innovation to keep away as of recurrence obstruction through human body. Sensors, for instance, temperature, heartbeat, movement are utilized in replica to fill its split roles. These sensors gather the information as of human body plus convert keen on computerized structure utilizing the simple to advanced converter. The consequence of these sensors is specified to microcontroller. The microcontroller to is utilized here is AVR microcontroller. The outcome as of the microcontroller is taken care of to the Li-Fi module which communicate the information as light plus the beneficiary end gather this information plus this information of enduring is to portable.

Keywords: Li-Fi, VLC, LED, Heartbeat sensor, Temperature sensor, IOT.

I. Introduction

In the period of arising innovation, it is significant to track down enhanced answer for each movement. These days medical care expenses are increasing as well as to lessen this expenses it is expected to encompass an innovation based medical care frameworks. Patient observes must be possible in an tremendously effective way utilize the Li-Fi innovation. Patient scrutiny alludes to "rehash or consistent perception otherwise estimation of patient, his/her physiological capability, as well as capacity of life support gear, to direct administration choices, including when to make therapeutics intercessions, and evaluation of those mediation" (Hudson, 1985,). Patient observing done via the Wi-Fi is more slow when contrasted through the Li-Fi plus it additionally has less statistics relocate capacity. Unwavering superiority is preferable in Li-Fi over Wi-Fi. Since broadcast of information via Wi-Fi is through RF waves, there is a elevated chance to these waves could influence the human body. The obligation of these signs might be cancer causing as well as this has been specified via the World Health Organization. To take care of this issue, Li-Fi (light loyalty) innovation is utilized for sound environment. Light loyalty is broadcast of statistics through optical remote medium. Sensors, for instance, heartbeat, temperature, as well as movement sensor be utilized sent through the Li-Fi module. Quick heartbeats be produced as 0s and 1s. Photograph diode is utilized at recipient end. Glimmering of light happen at the pace of many megabits per second. By utilizing Bluetooth, the recipient is associated through versatile. The statistics got in versatile can be shown in portable through an application. The scope of Li-Fi innovation is 10m and gotten correspondence is conceivable. The broadcast of statistics via light through remote is named as Visible Light Communication (VLC).

II Literature Review

As of [1]: Li-Fi is term worn to depict economical with rapid remote correspondence framework moreover is the future optical form of Wi-Fi. Light-Fidelity(Li-Fi) empower broadcast of information through enlightenment via sending information utilizing light emitting diode(LED) light to change in power quicker than the natural eye can follow. Li-Fi is essential for apparent light correspondence to apply to rapid remote correspondence. It employments noticeable range of light which is a piece of electromagnetic range, to could move enormous numerous surge of information all the whilst, in equal at high rates. Wi-Fi is fantastic for common remote application within a limited topographical region, while Li-Fi is normally suitable for elevated thickness remote information enclosure in a bound section what's more for alleviating radio obstruction issue. Li-Fi advance enhanced statistics broadcast, effectiveness plus safety than WiFi. By jumping all over minimal expense of LEDs as well as lightning mechanism, there be a few window of probability to utilize this medium, as of public web access through streetlamps to autonomous vehicle to can convey through their headlights. It is conceive to information for workstations; cell phone as well as tablets will be sent through light in a living space

As of [2]: It isn't unexpected baffling when the sluggish speed of organization prompts restricted availability plus extended handling hours whilst utilizing remote web either at home organization otherwise coffeehouse or air fatal otherwise seeking relocate pace at a congregation. As an ever increasing numeral of consumers is tapped in through their gadget, the obstructed wireless broadcast makes it hard to lock on a trustworthy sign. Envision a scenario where we can utilize waves other than Radio waves to surf the web? Radio wave is via all account entirely taken benefit of plus other range must encompass been investigated. In this heading, Dr Harold Haas, a German physicist planned a thought called "Information through elucidation" in which he utilized fiber optics to propel information through LED light.

As of [3] For Online assistance as of ability in clinical action specialist can deal recording/live statistics about tolerant for their best a medical process consequences. However, in this web-based support through radioing Frequency variety shaped via Wi-Fi association is destructive for patients body so all belongings being equal we can utilize Li-Fi an innovation to utilizations light burning diodes to converse information remotely. This manuscript will zero in on Li-Fi (Light Fidelity) innovation over Wi-Fi (Wireless Fidelity) innovation furthermore difficulty for communicate individual statistics about sympathetic through their medical procedure/Medical Therapy assembly.

As of [4]: This task presents the effecting of PIC microcontroller base remote design for human wellbeing observing structure utilizing the two sensors be utilized in particular, temperature as well as heartbeat pulse. The temperature sensor is utilize to consistently screen the interior heat level. The beat pulse sensor is utilize to gauge the heart rate via detect the alteration of blood volume in a feel conduit whilst the heart is siphon the blood. The sensors yield are specified to broadcast molding circuit to circumstance as well as enhance the sensors yield plus because of voltage value. These sensors yield be communicated through PIC microcontroller plus information is sent to hub remotely utilizing zigbee (MRF24J40), which passed the information's to a PC. The reading of sensor is noted as well as the statistics is communicated keen on the organization. These reading are put away, sent, got as well as shown information's in server indefatigably. This give an easy, robotized method for assembly a lot of sensors information. At last, it sends these information's to Visual crucial base programming via utilizing the Serial correspondence port.

As of [5]: Li-Fi represents light fidelity, it is a remote visual system organization innovation to utilize light emitting diodes (LEDs) for information broadcast. Li-Fi is exclusive in relative to Wi-Fi to sends information via utilize the range of apparent light. Likewise as through mounting admired for remote application as well as information rates linked through it we illuminate the utilization of Li-Fi as a remote innovation for massive organization, in manuscript we present the prologue to LiFi ,its set of experiences, plan, highlights of Li-Fi as well as at last an end is finished up.

III Application

1) Whenever when we journey through aviation route we deal through the issue in correspondence media ,in light of fact to entire aviation route correspondence be performed base on radio waves. To conquer this disadvantage on radio ways, li-fi is introduce.

2) Green statistics innovation implies to not at all like radio waves as well as other correspondence impression influences on birds, human body's moreover so on Li-Fi never give such consequences on any living thing.

IV Implementation

In the proposed framework the patient is observed utilizing Li-Fi rather than Wi-Fi. It decreases the radio obstruction in human body. Patient is checked utilizing assorted sensors like temperature, heart beat as well as movement sensor. The detect information is then distorted over keen on computerized structure in microcontroller. The outcome of the microcontroller is shipped off the Li-Fi module. The information is then communicates as light through the Li-Fi module as well as recognized in beneficiary side via the photograph identifier. They got is shipped off the worried individual through versatile. The concerned individual can get to the information of the enduring utilizing the versatile application information scrutiny utilizing Li-Fi.

BLOCK DIAGRAM

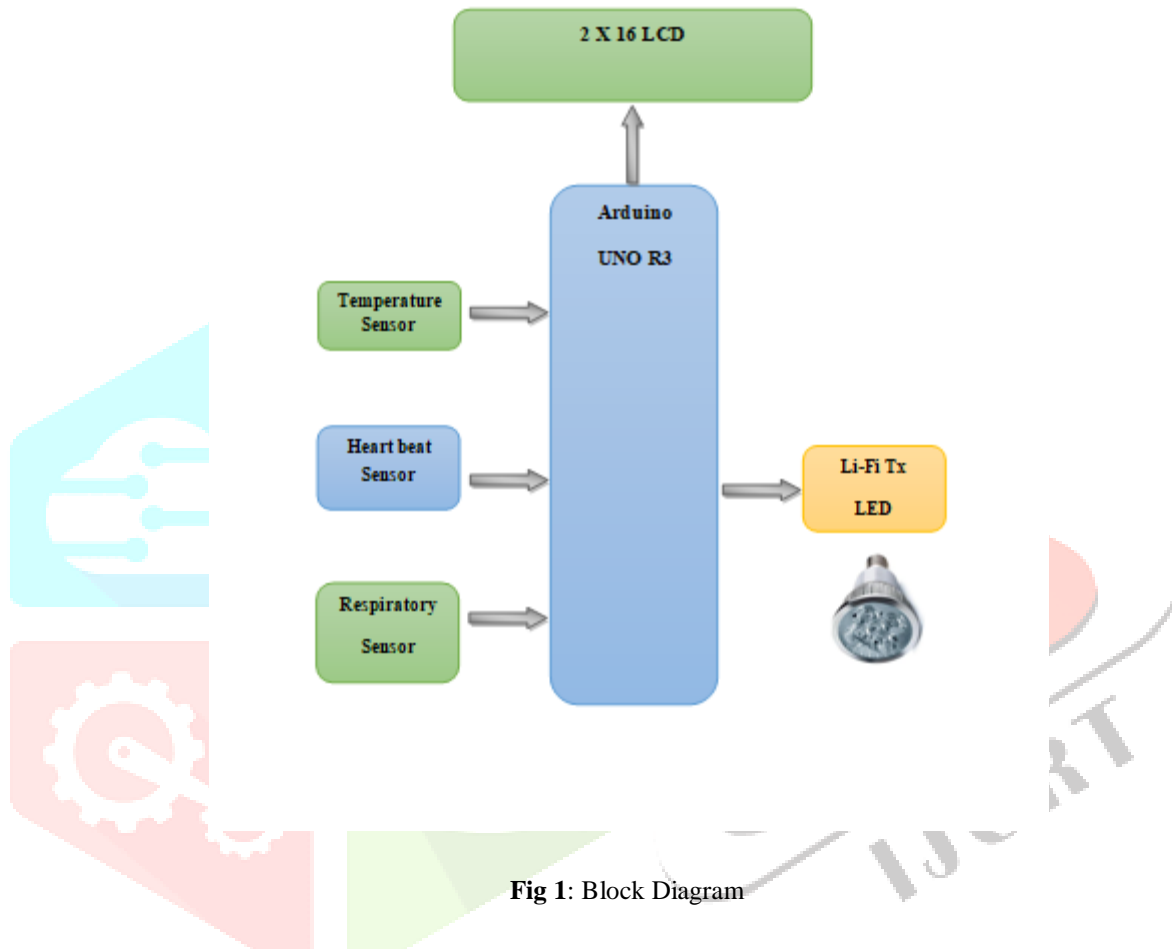


Fig 1: Block Diagram

A. Temperature sensor: The temperature sensor to utilized in planned replica is LM35. It is a thermistor to is utilized to gauge temperature of patient .The electrical outcome is relative to temperature in Celsius. Through the current variety the temperature of the patient is estimated.

B. Heartbeat sensor: It comprises of a radiant red LED as well as a light identifier. At the tip when the feel is put near sensor a specific measure of light goes through the finger furthermore relying on the power of light distinguished in locator the current is twisted in like manner. At the tip when no finger is set more luminous light power is recognized via the locator. So in view of the current variety the beat be recorded as well as information is gotten.

C. Transmitter Section: The power supply is distorted over as of AC to DC utilize the progression down transformer commencing 230V to 5V DC through the porch rectifier; the voltage controller LM7805 is utilized, channel capacitor of 1000µF is utilize to channel the commotion created beginning circuit. Three sensors heartbeat, temperature, as well as movement sensors are linked through AVR microcontroller. In the heart beat sensor the beat be recorded in view of optical power variety as light is dispersed or consumed through its way through the blood as heart beat change. Temperature sensor LM35 is utilized to gauge temperature of patient through electrical outcome corresponding to Celsius. Movement sensor detects the slant or tendency or direction in 2 or 3 aspects. The readings of the particular sensors be shown on LCD show. The AVR microcontroller is a 8 digit RISC plan as well as it utilizes streak memory. The sign is communicated through the Li-Fi transmitter furthermore the wellspring of broadcast is LED.

V Result Analysis

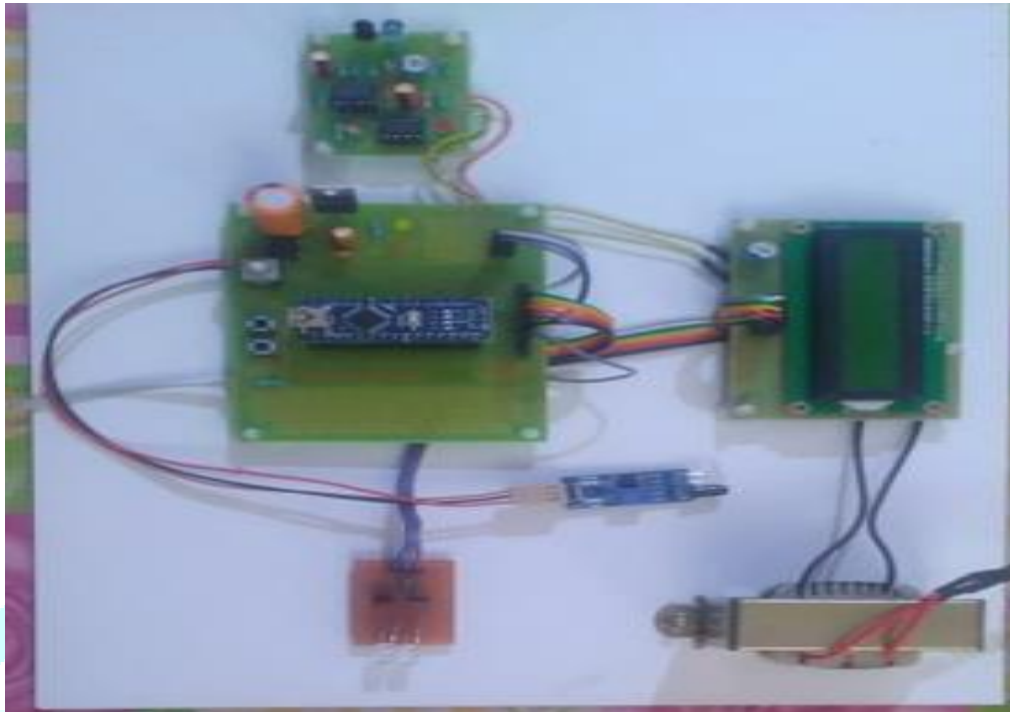


Fig 2: IOT Based Li-Fi Kit

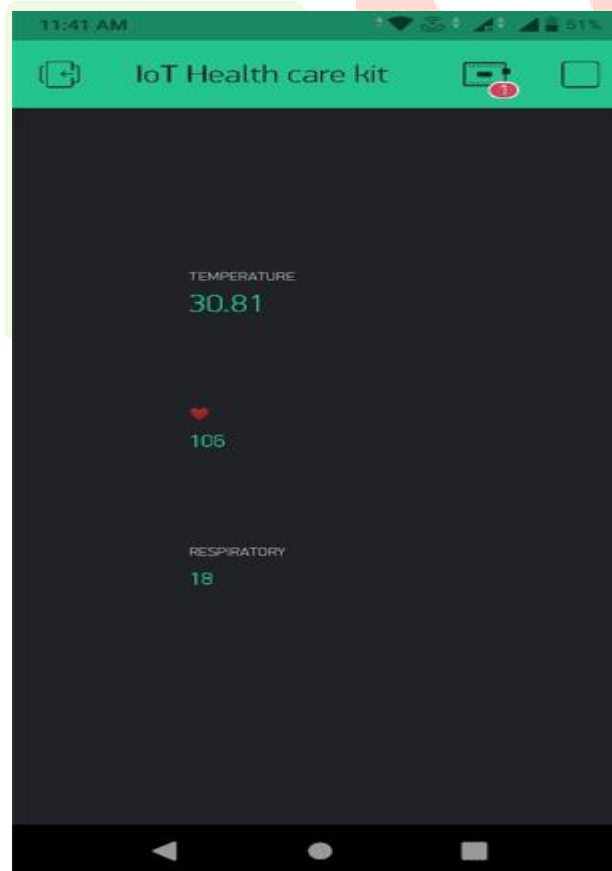


Fig 3 : Outcome for healthcare monitoring with heart rate, respiratory, temperature

VI.Conclusion

The prospects are assorted and can be investigated further. On the off chance that his innovation can be placed into functional use, each bulb can be utilized something like a Wi-Fi area of interest to converse remote information moreover we will continue toward the cleaner, greener, more safe as well as more promising instance to come. The idea of Li-Fi is as of now drawing in a lot of interest, not least since it might offer a real and exceptionally effective choice to radio-based remote. As a developing numeral of individuals plus their numerous gadget access remote web, the wireless broadcast be turning out to be progressively stopped up, making it increasingly more hard to acquire a solid, fast broadcast. This might settle issue like the lack of radio recurrence statistics relocate capacity furthermore permit web where customary radio base remote isn't permitted like airplane otherwise medical clinics. One of the deficiencies anyway is that it just works in direct sight.

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