Movie review analysis based on human reaction and action using eye tracker/ hand band using IOT

Project report submitted in partial fulfillment of the requirement for the degree of Bachelor of Technology

In

Information Technology

By

Ajinkya Singh 121431
Roma Singh 131412

Under the supervision of

Dr. Pradeep Kumar Singh

To

Department of Computer Science & Engineering and Information Technology **Jaypee University of Information Technology Waknaghat, Solan-173234, Himachal Pradesh.**

ACKNOWLEDGEMENT

It is great pleasure to present this report on the project named "**Movie review analysis based on human reaction and action using eye tracker/ hand band using IOT**" undertaken by us as part of our B. Tech (IT) curriculum.

We are appreciative to Jaypee University of Information Technology for offering us such a superb testing opportunity and we have taken endeavors in this venture and it is a joy that we wind up penning down these lines to express our genuine on account of the general population who helped us en route in finishing our venture. We profoundly express our true because of our venture co-ordinator Dr. Yashwant Singh for urging and enabling us to present this venture at our specialty premises for the fractional satisfaction of the prerequisites prompting the honor of B-Tech degree.Above all else, we might want to offer our thanks towards our venture control - Dr. Pradeep Kumar Singh for setting complete confidence and trust in our capacity to do this venture and for giving us his time, motivation, support, help, significant direction, useful feedback and consistent intrigue. They appreciated resentment of various duties and occupied timetable to help us finish this venture. Without the genuine and fair direction of our regarded extend manage we would have not been to achieve the present stage.

Date: 1/5/2017

AjinkyaSingh (121431)

Roma Singh (131412)

DECLARATION

We hereby declare that the work presented in this report entitled **"Movie review analysis based on human reaction and action using eye tracker/ hand band using IOT "** in partial fulfillment of the requirements for the award of the degree of **Bachelor of Technology** in **Information Technology** submitted in the department of Computer Science & Engineering and Information Technology**,** Jaypee University of Information Technology Waknaghat is an authentic record of our own work carried out over a period from August 2016 to December 2016 under the supervision of **Dr. Pradeep Kumar Singh** (**Assistant Professor (Senior Grade)in Department of Computer Science & Engineering).** The matter embodied in the report has not been submitted for the award of any other degree or diploma.

Ajinkya Singh 121431

Roma Singh 131412

This is to certify that the above statement made by the candidate is true to the best of my knowledge.

Dr. Pradeep Kumar Singh
Assistant Professor (Senior Grade)
Computer Science & Engineering

ABSTRACT

In this project our main focus is to accumulate the responses of a person while watching a movie and to compare the results with our previous compiled response and results or databases to predict the review of the movie (i.e. whether the person liked the movie or not).
This project aims on using eye trackers, pulse sensors, temperature sensors for analysis of reaction by tracking the pulse and eye movement of the test subject. We have used an Arduino Uno board to connect a pulse sensor in order to track the pulse rate of the test subject while watching a movie and record the corresponding response and then predict the review of the user automatically.

Table of Contents

CHAPTER-1 INTRODUCTION

1.1 Microcontroller-Arduino Uno R3

The Arduino Uno is a microcontroller board in light of the ATmega328. It has fourteen computerized data/yield pins (out of which 6 can be utilized as PWM yields), 6 simple data sources, a sixteeen MHz earthenware resonator, a USB association, a power jack, an ICSP header, and a reset catch. It has everything that is required for supporting the microcontroller; simply associate this to a PC with the assistance of a USB link or can control it with an AC-to-DC connector or a battery to begin it.

The Uno contrasts with every established board in that it does not utilize the FTDI USB-to-serial driver chip. Rather than that it highlighted the Atmega16U2 (Atmega8U2 up to adaptation R2) that modified as a USB-for periodic converter.

Correction 2there's a resistor in the Uno board that pulls 8U2 HWB line to ground, this makes it simple to put in DFU mode.

Correction 3 of the board has got taking after extraordinary elements:

- Pinout: ther's an expansion of SDA and SCL pins near the AREF stick and there are other two new sticks put intently against the RESET stick, the IOREF that give the shields to adjust to the voltage being given by the board. In future, shields will be perfect with both boards that employmentsthe AVR, which operates using 5V and with the Arduino Due that operates with 3.3V. The second pin is a disconnected pin, and is reserved for future use.

    - Stronger RESET circuit.
    - Atmega 16U2 replace the 8U2.

The meaning of "Uno" in Italian is one and is hence used to marks the coming soon release of Arduino 1.0.Further as a reference versions of Arduino the Uno and version 1.0 will be

used. In USB Arduino boards Uno is the latest one and also in Arduino platform it is taken as a reference model.

1.2 Pulse Sensor

The Pulse Sensor is a perfect match plug and-play heartbeat-rate sensor for Arduino. Anybody must be able to utilize this like a specialists, understudies, producers, diversion, and competitors and also by versatile engineers who can to effortlessly incorporate information containing live heart-rate in their activities. It basically joins a basic optical heart rate sensor with intensification and commotion cancelation hardware making it quick and simple to get solid heartbeat readings. In like manner, it has control with just 4mA current draw at 5V subsequently phenomenal for compact applications.

1.3 Bluetooth Module

HC-05 module is a very uncompilcated device to use with Bluetooth SPP (Serial Port Protocol) module, planned for translucent wireless recurrent connection setup.

Serial port Bluetooth module is fully eligible Bluetooth V2.0+EDR (Enhanced Data Rate)

3Mbps Modulation with full 2.4GHz radio baseband & radiator. It uses CSR Bluecore 04-External single chip Bluetooth system with CMOS technology and supporting AFH(Adaptive Frequency Hopping Feature). It has footmarkss as small as 12.7mmx27mm.

1.4 Methodology

- Create a database of predetermined reactions and there corresponding emotions using test cases or analyse previously created databases using big data analysis
- Analyse reactions and predict emotions of the user in real time
- Check the validity of the emotions with respect to the context of stimuli
- Predict the review of the user(expected output) .

1.5 Objective

In this project our main focus is to accumulate the responses of a person while watching a movie and to compare the results with our previous compiled response and results or databases to predict the review of the movie (i.e. whether the person liked the movie or not).
This project aims on using eye trackers , pulse sensors, temperature sensors for analysis of reaction by tracking the pulse and eye movement of the test subject . We have used an Arduino Uno board to connect a pulse sensor in order to track the pulse rate of the test subject while watching a movie and record the corresponding response and then predict the review of the user automatically

CHAPTER-2 LITERATURE SURVEY

2.1 Overview(Tony Jebara)

The Action Reaction Learning (ARL) structure is a programmed intutive machine learning framework. It freely concentrates on human associations in gathering and from their conduct learn and advance they include just a single individual for blending constant connection. The model is on a very basic level observational and is gotten from what people do remotely, not from basic behavioral structures or built in intellectual learning and models. Prior it was studied on human behavioral model by psychological researchers was that people activity and the response to that move is made as info and yield or an arrangement of boost retaliation.[26] [23].

The models depended on perception and observational reviews. These behaviorists went under feedback as psychological science advanced past their improved model and battled with greater request problems(i.e. dialect, imagination,consideration) [14]. By the by, a significant part of the lower-arrange reactionary conduct was still very much displayed by the jolt reaction worldview. A characteristic onlooker will scarcely contribute much, when it desires nearer examination these basic won't do much so one needs to notice that it isn't so much that simple procedure however a mind boggling one.

We present Learning Action-Reaction for the recuperation of conduct by humans making it interesting to the behaviorists' jolt reaction (data-yield) show. By learning relations between's movements, being noticing perceptually (i.e. utilization of a dream framework), it is possible to imitate essential human practices. This is encouraged by the advancement of PC vision past static estimations to worldly examination and active models. For example, Blake and others [3] talk about dynamic sight past static symbolism utilizing incorporates Kalman lters and active frameworks. All the more of late, learning calculations for visual tracker of human errand and other composite activities has been found and furthermore the behavioral machine that can clarify high request for controled structure. Isaard portrays how various theory active models can learn complicated hand flow also display better following [9]. Bobick and Wilson talk about studying hand flow utilizing concealed Markov models in a state space

[27] to learn complicated motions. Replicas joining progression along with educated Markov models are examined by Pentland [19], and Bregler [4] for anticipating and grouping human conduct. Johnson [17] uses neural systems are being utilized for the expectation of strolling practices and furthermore break down the human conduct when they collaborate. Consequently, an essential move is occurring as programmed vision and discernment permit the securing of behavioral models from perceptions. When everything is accomplished through behavioral models ,the ARL structure is utilized and this is finished by fuson of recirpocal conduct with people (utilizing ongoing visual tracker once more). Essential commitments in conduct union emerge in apply autonomy and movement. Discussing the ALIVE system[15], ther's body following which permits the client collaboration with Silas, its a graphical pooch and depends on contending practices and additionally ethological models. Terzopolous [22] depicts a vivified domain of engineered sh in view of dynamical models. In mechanical autonomy, Brooks [5] called attention to the need with feeling grounded frameworks for base up apply autonomy reaction. Pirjanian [20] examines targets and basic leadership in mechanical conduct. Uchibe [24] instruct robots to gain football playing collaborations utilizing support learning. Mataric [16] shows communicating multi-specialist robots roused from science, psychological models and neuroscience. Extensive [13] portrays numerous contending dynamic models for orchestrating complex conduct amalgamation. We consider the coordination of both intution and extra conduct. The (ARL) Action-Reaction Learning structure is at first introduced. In this approach past exercises are taken as info and as a yield future movement is taken and an endeavor is made between them (i.e. an expectation) to unveil a probabilistic mapping. The structure performs pantomime learning by watching individuals instead of manual division, oversaw get ready or classication. In unmistakable, of communications of time arrangement we came to realize, that how two people cooperates and on the premise of their past interactions(taken as an information) their yield is being anticipated. A probabilistic model is speculated using, Conditional Expectation Maximization covering again all the confined thickness of the two members input yield relations. There's a concise discourse on perceptual inputs1 as learning framework. Along these lines, there is a depiction of the treatment of temporary statistics and the usage of a probabilistic model for determining reactions to a past association.. The result of the framework was later perceived as a graphical character. A case application and a

few outcomes delineating the strategy are then appeared as the framework figures out how to carry on with basic gestural associations. Adequately, the framework figures out how to play or act not by being expressly customized or regulated but rather just by watching human members

2.2 Objective

Learning Activity Reaction is an extremely usefulv approach with the end goal of dissecting and incorporates human lead. This review unveils causal mappings by watching time groupings by the past and occasions yet to occour or between response of any activity. We apply this strategy to watch human cooperation and to along these lines discover mixes of human conduct. By utilizing a this arrangement of time there's some essential estimations, this framework consequently unveils the relationships between's past motions of one human taking an interest (an activity) and an up and coming signal (a response) from another taking part human. A probabilistic model is set up from the realities of the human participation utilizing a novel assessment strategy,(CEM) . The range uses general bouncing and make the best use to monotone and the best prohibitive likelihood result. The learning structure powers a visual natural character which probabilistically imagine a plausible response to a customer's lead and performs it insightfully. Hence, after the examination of human connection including two members, the framework is presently accessible substitution of one of the clients and associates with a solitary client remaining.

2.3 Review

Learning Activity Reaction tries to do is explore the coupling between the previous affiliation and the accompanying fast reaction of the members..Therefore what we in a perfect world concentrate from this is a few calculations to foresee human response in view of their response to comparable circumstances in the past by making a database .The different calculations considered appropriate for this design are given beneath.

2.4 Probabilistic Time Series Modelling

Clearly, rapidly after the time window over the past, another recognition y(t) (of the not all that removed future) is moreover gotten from the arrangement data. One may again basically vectorize the parameters of the perceptual system (the Gaussian after blobs) into yet another y vector (of dimensionality R30). The x(t) vector addresses the past action and the y(t) addresses the resulting reaction unequivocally at time t. We can make out thousand number of sets of vector x and y (i.e. match of activity response) for a couple of minutes of information by sliding the obsevational window over the time arrangement preparing. This eventually demonstrating the advancement of dominanting 3 measurements of the vectors x(t) and as there's an association of communication between a couple of members with t time of a large portion of a moment generally. This speaks to the advancement of the fleeting memory of the learning framework amid a large portion of a moment. Adequate sets are given of the (x(t), y(t)) vectors from the prepared information, it is even conceivable to start searching for the examples among a couple of people ,their past connections here and now memory and the consequent response in future. A framework which figures this example can anticipate what to be done next and to draw in with only one human. In any case, it merits having a probabilistic approach as opposed to learning on a correct deterministic mapping among x and y, as how it is done in an assessing neural system. This incorporates assessment of a probabilistic thickness connoted as p(yjx) which yields the probabilistic reaction driven from a past movement when it checked from the short history there. We will dependably have a perception of the past (x) however (y) what's to come is what are the worries that is there to anticipate. We for example, are not worried about restrictive pdf p(xjy), which processes the likelihood given the eventual fate of past (x) Mainly, we will address about the future outcomes it saw that ought to take after the activity. The utilization of probabilistic procedures here permits the thought of irregularity and stochasticity which is fitting for conduct displaying. Fundamentally, they are making the framework producing conduct that is relating with the past client's and their activity however in the meantime is not something you can totally figure and have some pseudo irregular choice in its own particular place of substantial reactions.

2.5 Contingent Assumption Maximization

For the mapping amongst x and y or to the activity and its response space a contingent estimation of thickness capacity is being assessed. This undetermined mapping is proper because of haphazardness of the intelligent conduct in people, the clamor in the perceptual frameworks and the meager condition of the perceptions. Expansion to this, as x is continually being watched and seeking after the forecast of y i.e. its ensuing response , there's a prerequisite of p(yjx) which is a type of contingent thickness. The molded blend of Gaussians is chosen for its capacity to display non-straight marvels and its usability. The model can be translated as a blend of specialists with various direct promoters and ellipsoidal premise gating capacities [12]. Condition 3 portrays the model where N speaks to an ordinary circulation (Gaussian). p(yjx) = p(x;y) p(x) = PM mP p(x;y;m) m p(x;m) = PM m p(m)N(x;yjxm;ym;xxm ;yym ;xym) PM m p(m)N(xjxm;xxm) (3) 10 coventionally evaluating probabilistic replicas is finished by augmenting the probability (L) of a model () gives information as appeared in Eq 4. Desire Maximization [16] could used to propel the framework of a probability thickness having true objective that, joint thickness is a good model of the data. In grouping, for example,information is managed similarly without outstanding examinations for the refinement between the i/o x and y. If information is part as beforehand said into response (y) and covariate (x) fragments, this exhibits the covariate sections would reliably be open to the structure. In this manner, while tting a probabilistic model to the information, we ought to improve it just to anticipate y utilizing (x is constantly measured). This structures a more showcase replica that focuses on demonstrating assets for the job needing to be done. L = Y N i=1 p (xi; yij) (4) We as of late built up a variation of the EM calculation called

(CEM) Maximization of Restrictive Expectation (for extraordinarily streamlining contingent probability [10]. It basically as a likelihood thickness work (pdf) that boosts the restrictive probability of these reaction given that covariate. CEM is an recurring procedure that utilizes xred point arrangements (that. rather than angle drop) to unite the parameters of a contingent thickness to a nearby greatest of restrictive probability (Lc) as depicted by Eq 5. The arrangements of red point are controlled by sorting out a smaller extend on contingent log-to some degree and expanding the lower go over and again. The CEM calculation has additionally been reached out to utilize priors for Maximum A Posteriori or MAP estimation

and deterministic tempering for more worldwide arrangements. Lc = Y N i=1 p(yijxi;) (5) Applying CEM to the pdf enhances its p(yjx) over the information. EM, then again, ordinarily improves p(x; y), the capacity to display the information all in all. Since assets (i.e. memory, intricacy) are scanty and preparing illustrations are nite, it is ideal here to specifically upgrade the model's contingent probability [21] utilizing CEM. As such, we need the learning framework to be great at guring out what Mrs. Dash will do next (i.e. utilize x to foresee y). We are not as keen on asking the framework what past occasion would have incited Mrs. Dash to do what she simply did (i.e. utilize y to get x). Consider the 4-group (x; y) information in Figure 8(a). The information is displayed with a contingent thickness p(yjx) utilizing just 2 Gaussian models. Evaluating the thickness with CEM yields the p(yjx) appeared in Figure 8(b). CEM indicates development (Figure 8(c)) that is to some degree in monotone condition and gets a more contingent likely model. In the EM case, a joint p(x; y) groups the information as in Figure 8(d). Molding it yields the p(yjx) in Figure 8(e). Figure 8(f) delineates EM's non-monotonic advancement of contingent log-probability. EM delivers a predominant joint probability (L) yet a substandard contingent probability (Lc). Take note of how the CEM calculation used restricted assets to catch the multimodal way of the circulation in y and disregarded spurious bimodal grouping in the x highlight space. These 11 0 5 10 −2 0 2 4 6 8 10 12 0 10 20 30 40 −2.5 −2.45 −2.4 −2.35 −2.3 −2.25 −2.2 −2.15 −2.1 Iterations Conditional Log−Likelihood (a) Data (b) CEM p(yjx) (c) CEM log(Lc) 0 5 10 −2 0 2 4 6 8 10 12 x y 0 10 20 30 40 −2.55 −2.5 −2.45 −2.4 Iterations Conditional

Log−Likelihood (d) EM t (e) EM p(yjx) (f) EM log(Lc) Figure 8: Conditional Density Estimation for CEM and EM properties are basic for a decent restrictive thickness p(yjx). In relapse probes institutionalized databases, blend models prepared with CEM beat those prepared with EM and in addition regular neural system designs [10]. Along these lines, the CEM calculation is utilized to gauge the restrictive likelihood thickness (cpdf) relating past time arrangement successions (x) to their prompt future qualities (y) from preparing information (a large number of x; y sets). A sum of M Gaussians are t to the information as a molded blend display. This is at last used to relapse (anticipate) the future estimations of a period arrangement for a solitary forward stride in time. Once the estimation of this behavioral model from the preparation information is finished, it turns out to be anything but

difficult to calaulate the obscure y^ from watched x. At the point when x^ is measured from the past time arrangement action and embedded into the restrictive likelihood thickness, it yields a peripheral thickness only over the variable y (the expectation or response to the past jolt succession). This thickness ends up being 30 dimensional, M-part Gaussian mix of model. Be that as it may, we have to choose a solitary response, y^ from the space of conceivable responses over y. It is standard in Bayesian derivation to utilize the desire of an appropriation as its agent. Utilizing the pdf over y, we incorporate as in Equation 6 to acquire the anticipated y^, a probable response as indicated by the model .

CHAPTER-3 SYSTEM DESIGN

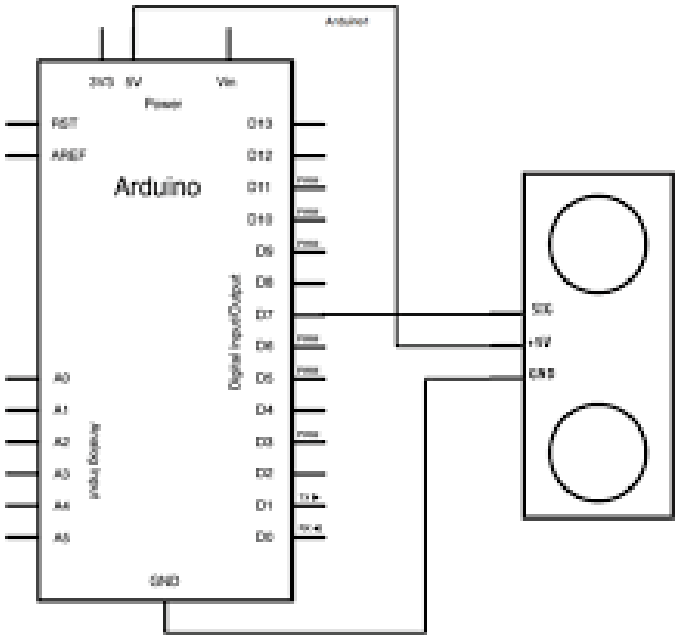


Fig 3.1

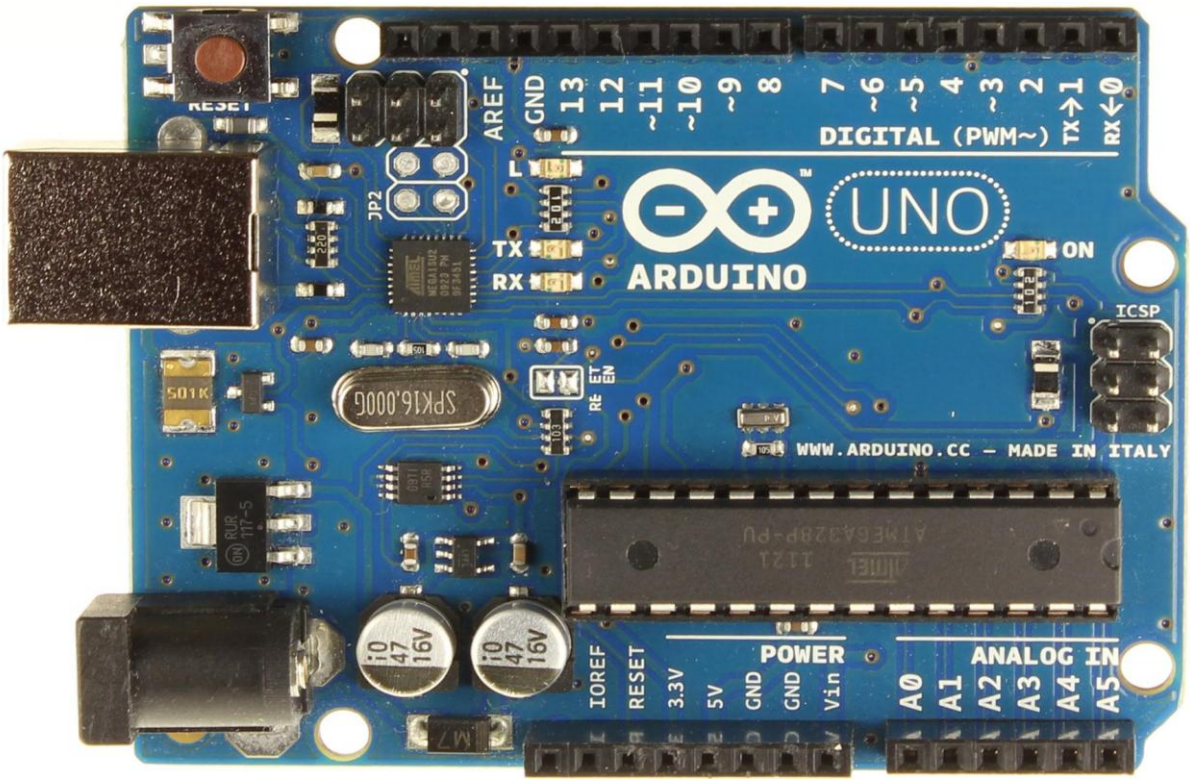


Fig 3.2

Technical Specifications

Microcontroller	**ATmega328P**
Operating Voltage	**5V**
Input Voltage (recommended)	**7-12V**
Input Voltage (limit)	**6-20V**
Digital I/O Pins	**14 (of which 6 provide PWM output)**
PWM Digital I/O Pins	**6**
Analog Input Pins	**6**
DC Current per I/O Pin	**20 mA**
DC Current for 3.3V Pin	**50 mA**
Flash Memory	**32 KB (ATmega328P)of which 0.5 KB used by bootloader**
SRAM	**2 KB (ATmega328P)**
EEPROM	**1 KB (ATmega328P)**
Clock Speed	**16 MHz**
LED_BUILTIN	**13**
Length	**68.6 mm**
Width	**53.4 mm**
Weight	**25 g**

Table 3.1

Pin Configuration

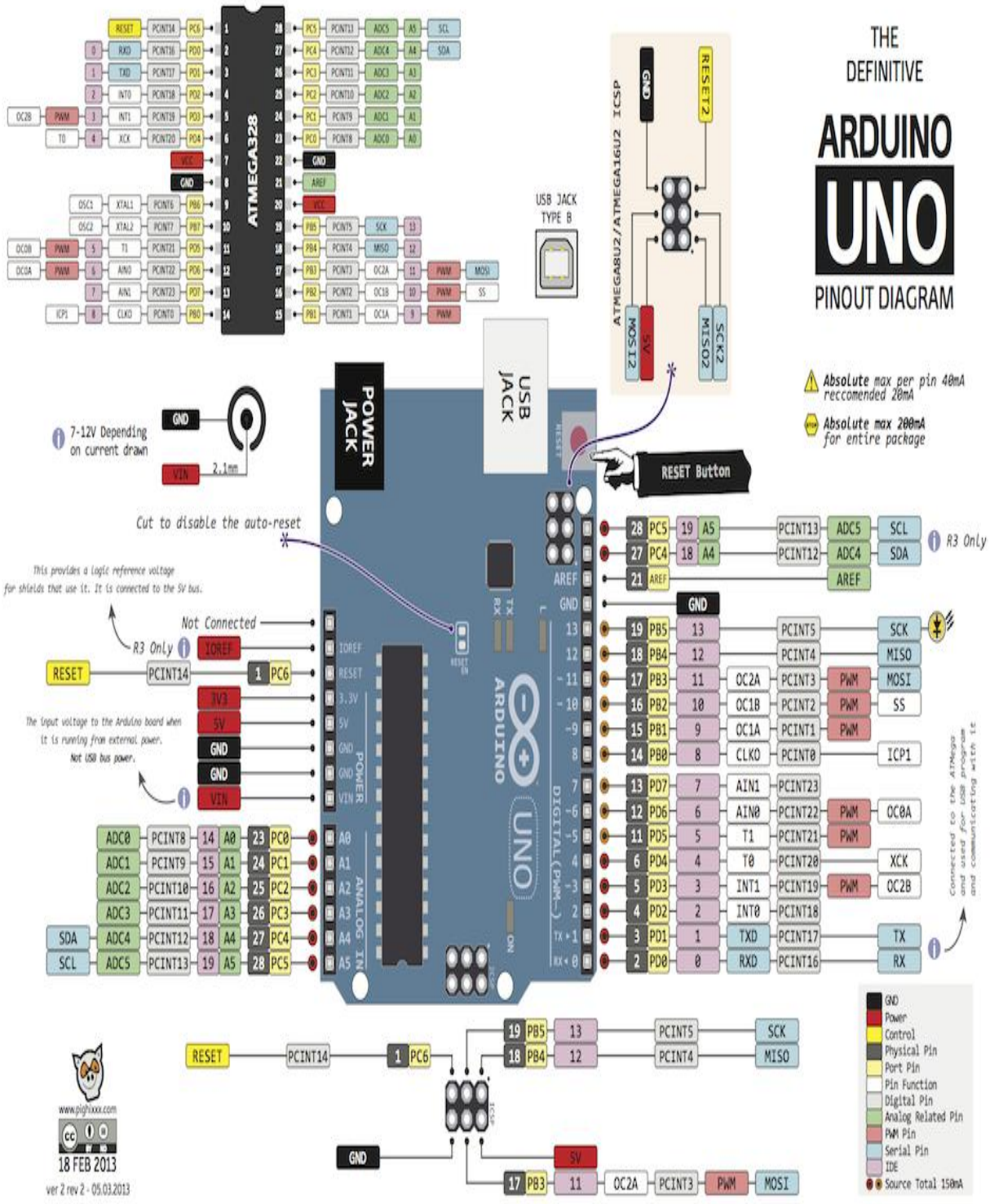


Fig 3.3

1. Input / Output

   On the Arduino Uno there are 14 digital pin each can be used both as an input and output and for that we have to use digitalWrite(),digitalRead() and pinMode() functions. They work at 5 volts. Each stick can give or get a greatest of 40 mA and has an inner draw up resistor (disengaged naturally) of 20-50 kOhms.In expansion, a few pins have specific capacities:
2. Serial: pins 0 (RX) and 1 (TX).
3. Utilize (RX) as a collector side and transmitting (TX) TTL information serially. These pins are associated with the comparing pins of the ATmega8U2 USB-to-TTL Serial chip.
4. External Interrupts: pins3 , 2.
5. Pins 2 and 3 can be formated to enact for an interference on a lesser esteem, a falling or rising edge, or in an evolving esteem. See the attachInterrupt() work for points of interest.

6. PWM: 3, 5, 6, 9, 10, 11.
7. Give eight-bit PWM yield using simple Write() work.
8. SPI: 10 (SS), 11 (MOSI), 12 (MISO), 13 (SCK).
9. SPI correspondence is being upheld by utilizing this SPI library.
10. There is a LED in-constructed associated with stick 13.
11. The LED is on, when the stick 13 is HIGH esteem, and off when the stick 13 is LOW. Uno having 6 simple data sources , named A0 through A5, with determination 10 bits (i.e. 1024 particular qualities) given by each. As per normal procedure they measure from ground to 5 volts, however is it possible to change the upper end of their range using the AREF stick and the straightforward Reference() work.
12. Moreover, a few pins have particular usefulness:TWI: SCL pin or A5 and SDA pin A4.

    Bolster TWI correspondence utilizing the Wire library.

    There are two or three different sticks on the board:

    AREF.

    Reference voltage for the simple sources of info. Utilized with simple Reference ().

13. Reset.

    Get this line LOW to get back to default microcontroller. Mainly used to provide shields an additional reset for blocking one on this board.

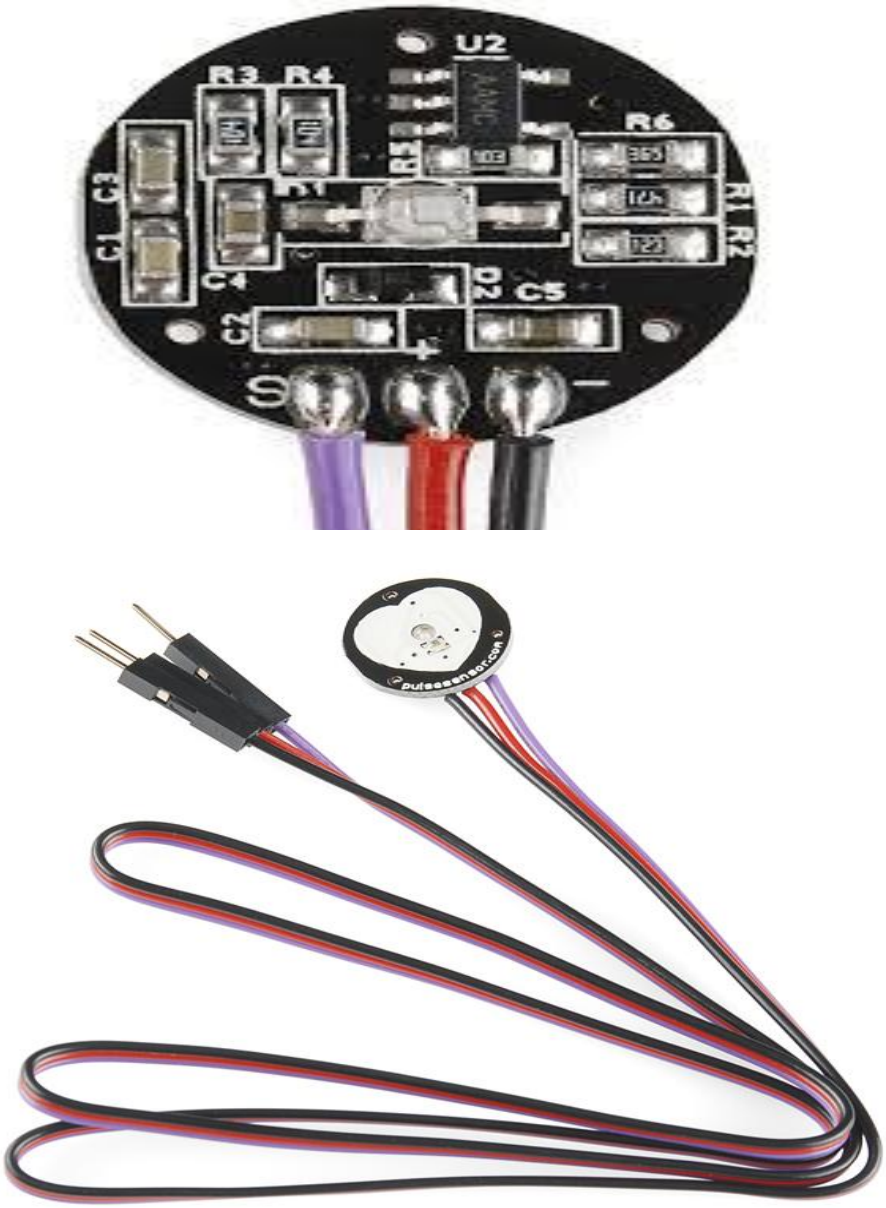


Fig 3.4

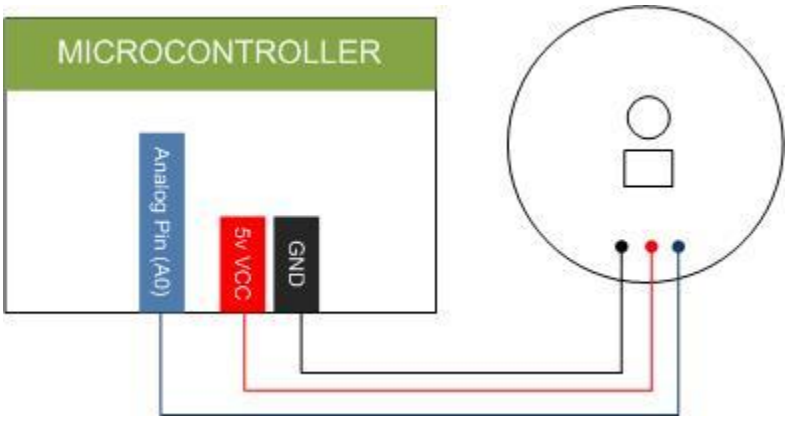


Fig 3.5

Pulse Sensor Anatomy

The front of the sensor is the genuinely concur with the Heart logo. This is the side that achieves the skin. On the front you see a little round crevice, which is the place the LED transmits through from the back, and there is similarly a little square basically under the LED. The square is an encompassing light sensor, accurately like the one used as a piece of cellphones, tablets, and convenient PCs, to adjust the screen sparkle in low-light settings. The LED shines light into the fingertip or ear ligament, and the sensor scrutinizes the light that ricochets back. The rest parts of the sensor are mounted at the back of it. We put them there so they would not hinder the of the sensor on the front. Indeed, even the LED's that are being utilized is a LED that is switch mounted.

The link is a 24" level shading coded lace link with a standard female header connector.

RED wire = +3V to +5V

Dark wire = GND

PURPLE wire = flag (simple stick 0 [zero] in provided code) .

The Pulse Sensor can be associated with arduino with jumpers, or connected to a breadboard with male header pins.

Bluetooth Module

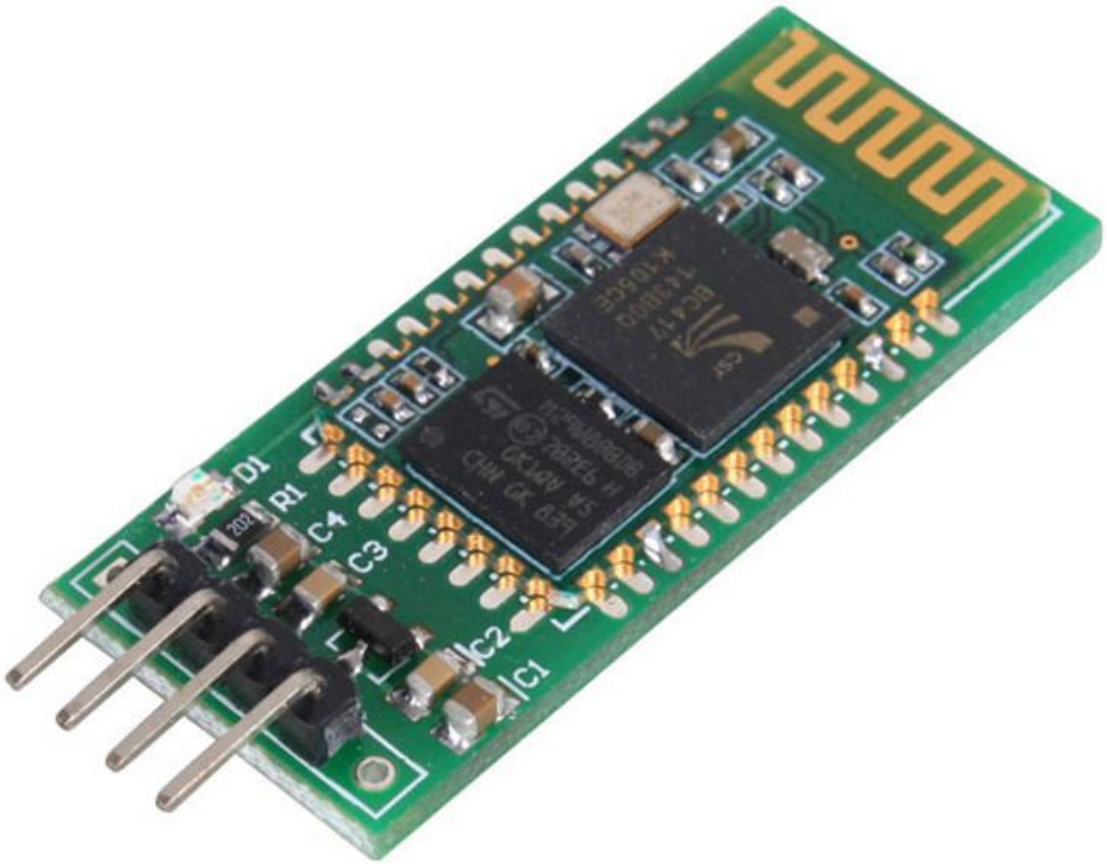


Fig 3.6

Specifications

Feature of a Hardware

·Conventionally - sensitive up to 80dBm

·Transmission power up to +4dBm RF

·1.8 to 3.6V I/O and low power 1.8V Operation ,

·PIO controller

·Programmable baud rate with UART interface.

•With incorporated recieving wire

•With edge connector

Programming Features

•Default Baud rate: 38400, Data bits:8, Stop bit:1,Parity:No equality, Data control: has.

upheld baud rate: 9600,19200,38400,57600,115200,230400,460800.

•Given a rising heartbeat in PIO0, gadget will be detached.

•Status guideline port PIO1: low-detached, high-associated;

•PIO10 and PIO11 can be associated with red and blue drove independently. Whenever ace and slave are combined, red and blue drove flickers 1time/2s in interim, while disengaged just blue drove squints 2times/s.

•Connect as a matter of course keep going gadget on power naturally.

•Permit blending gadget to associate as default.

•Auto-blending PINCODE:"0000" as default

•Auto-reconnect in 30 min when detached subsequently of past the scope of association

Hardware

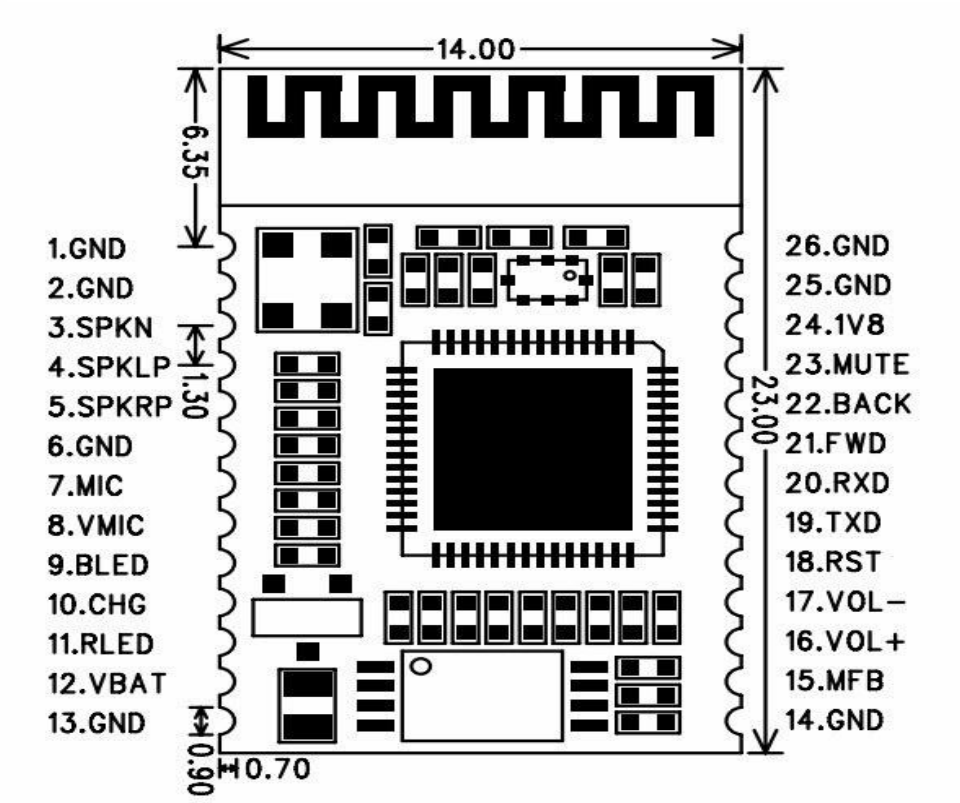


Fig 3.7

Pin Description

The HC-05 Bluetooth Module has 6 pins. They are as per the following:

1. ENABLE: When empower is pulled LOW, the module is debilitated which implies the module won't turn on and it neglects to communicate .When empower is left open or associated with 3.3V, the module is empowered i.e the module stays on and correspondence likewise happens.

2. Vcc: Supply Voltage 3.3V to 5V

3. GND: Ground stick

4. TXD and RXD: These two pins goes about as a UART interface for correspondence

5. STATE: It goes about as a status indicator.When the module is not associated with/combined with some other bluetoothdevice,signal goes Low.At this low state,the drove flashes ceaselessly which means that the module is not matched with other device.When this module is associated with/combined with some other bluetoothdevice,the flag goes High.At this high state,the drove flickers with a steady postpone say for instance 2s defer which shows that the module is matched.

6. BUTTON SWITCH: This is utilized to switch the module into AT summon mode.To empower AT order mode,press the catch switch for a second.With the assistance of AT commands,the client can change the parameters of this module yet just when the module is not combined with some other BT device.If the module is associated with some other bluetooth gadget, it begins to speak with that gadget and neglects to work in AT charge mode.

Pin Configuration of Bluetooth Module

PIN Name	PIN #	PAD Type	Description	
GND	**13,21,22**	**VSS**	**Ground Pot**	
3.3 VCC	**12**	**3.3V**	**Integrated 3.3V(+) supply with On-chip linear regulator output within 3.15-3.3V**	
AIO0	**9**	**Bi-directional**	**Programmable input/output line**	

AIO1	**10**	**Bi-directional**	**Programmable input/output line**	
AIO0	**23**	**Bi-directional RX EN**	**Programmable input/output line, control output for LNA (if fitted)**	
AIO1	**24**	**Bi-directional TX EN**	**Programmable input/output line, control output for PA (if fitted)**	

Table 3.2

PIN Name	**PIN #**	**PAD Type**	**Description**	
PIO2	**25**	**Bi-directional**	**Programmable input/output line**	
PIO3	**26**	**Bi-directional**	**Programmable input/output line**	
PIO4	**27**	**Bi-directional**	**Programmable input/output line**	
PIO5	**28**	**Bi-directional**	**Programmable input/output line**	

PIO6	**29**	**Bi-directional**	**Programmable input/output line**
PIO7	**30**	**Bi-directional**	**Programmable input/output line**
PIO8	**31**	**Bi-directional**	**Programmable input/output line**
PIO9	**32**	**Bi-directional**	**Programmable input/output line**
PIO10	**33**	**Bi-directional**	**Programmable input/output line**
PIO11	**34**	**Bi-directional**	**Programmable input/output line**

Table 3.3

PIN Name	PIN #	PAD Type	Description
RESETB	**11**	**CMOS input with weak internal pull-up**	**Reset of low.inputdebouncde so must be low for >5MS to cause a reset**

UART_RTS	**4**	**CMOS output, tri-stable with weak internal pull-up**	**UART request to send, active low**
UART_CTS	**3**	**CMOS input with weak internal pull-down**	**UART clear to send, active low**
UART_RX	**2**	**CMOS input with weak internal pull-down**	**UART Data input**
UART_TX	**1**	**CMOS output, tri-stable with weak internal pull-up**	**UART Data output**
SPI_MOSI	**17**	**CMOS input with weak internal pull-down**	**Serial peripheral interface data input**

Table 3.4

PIN Name	PIN #	PAD Type	Description
SPI_CSB	**16**	**CMOS input with weak internal pull-up**	**Chip select for serial peripheral interface, active low**
SPI_CLK	**19**	**CMOS input with weak internal pull-down**	**Serial peripheral interface clock**

SPI_MISO	**18**	**CMOS input with weak internal pull-down**	**Serial peripheral interface data output**	
USB_-	**15**	**Bi-directional**		
USB_+	**20**	**Bi-directional**		
NC	**14**			
PCM_CLK	**5**	**Bi-directional**	**Synchronous PCM data clock**	
PCM_OUT	**6**	**CMOS output**	**Synchronous PCM data output**	
PCM_IN	**7**	**CMOS input**	**Synchronous PCM data input**	
PCM_SYNC	**8**	**Bi-directional**	**Synchronous PCM data strobe**	

Table 3.5

How to connect HC05 bluetooth module with Arduino Uno?

Equipment and Software needed

HC-05 Bluetooth Module

Arduino Uno

Arduino IDE(1.0.6V)

Equipment links

As we understand that Vcc and Gnd of the module goes to Vcc and Gnd of Arduino.The TXD stick goes to RXD stick of Arduino and RXD stick goes to TXD stick of Arduino i.e(digital stick 0 and 1).The customer can use the on board Led. Nevertheless, here,Led is related with modernized stick 12 remotely for progression of the technique

CHAPTER-4 PERFORMANCE ANALYSIS

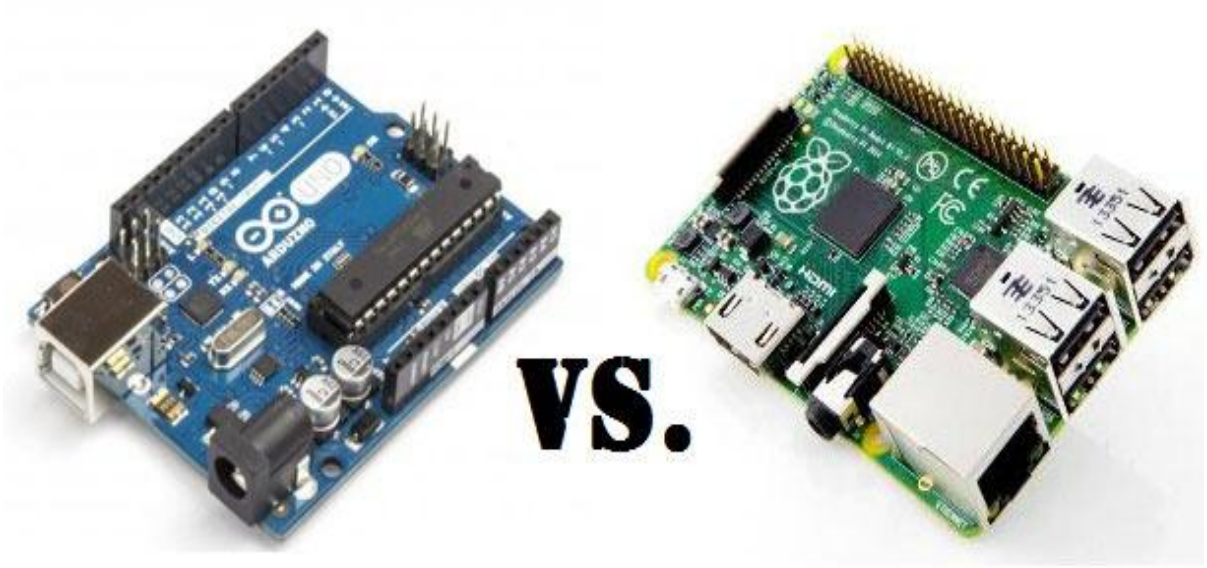


Fig 4.1

Arduino being a microcontroller, is not as much competent as Raspberry Pi, and where as Pi can be considered as a one section on PC system. Be that as it may, it is an awesome equipment for embedded ventures. To run this it is quite recently not important to utilize an OS and programming applications, just a single requires is a code of not very many lines and make it run. There are numerous Arduino sheets like uno, PRO, MEGA, Arduino DUE and so forth

Arduino and Raspberry Pi are the most prevalent sheets among the understudies, specialists and experts. Experts and experienced know the distinctions and utility between the them. Be that as it may, amateurs and understudies regularly get confounded between them¬, similar to which board to use for their venture or which board is anything but difficult to learn or why would they utilize Arduino over Pi and the other way around. So

here are generally every one of the parts of Arduino versus Raspberry Pi that has been secured which makes a tad bit simpler for the client to pick one over the another.

Raspberry Pi completed worked PC, a framework on-chip (SoC) gadget, which keeps running on a Linux working framework uniquely intended for it, named Rasbian. Rasbian is the official OS for Raspberry Pi, where other outsider OSes like Firefox OS, Android, RISC OS, Ubuntu Mate and so forth can be utilized for establishment on Windows 10 form is likewise accessible for Pi. Like a PC, It has a good memory, fast processing,faster USB outlets, sound yield, realistic driver for HDMI yield and as it keeps running on Linux, the greater part of the linux programming applications can be introduced on it. It has different corrections and models like Raspberry Pi, then came Raspberry Pi 2, then the Pi Model B+ and some more.

Preferences of Arduino over Raspberry Pi:

Fig 4.2

Simplicity:

It is simple to interconnect analog sensors, motors and other hardware electronic components with Arduino, having only a few number of code lines. When there's a need for the installation of some softwares and libraries for sensors and components interfacing ,then just for simply reading those sensors Pi is over headed. What's more, the coding in Arduino is easier, while one needs information of Linux and its charges for utilizing the Raspberry pi.

Vigor:

Raspberry Pi keeps running on an OS so it must be legitimately stopped down before turning the power, generally OS and other apps might get degenerate and Pi can be harmed. Where Arduino is just a connection and play contraption that is utilized for turning ON and OFF at whatever time, with no peril of damage. It may begin executing the program again on switching on the power.

Control expend:

Pi is a successful gear, it needs consistent 5v control supply and it is not easy to keep running on batteries, where as Arduino, needs lesser energy and using a low battery pack..

Price:

Arduino costs around $10-20 where as Raspberry is around $35-40 ,it depends upon the version. Arduino is cheaper than Pi.

What is the disimilarities ?

The Raspberry Pi and Arduino may look very comparative – both of them are little circuit sheets with pins on them and a few chips – however are two different gadgets.
The Arduino is not a mini-computer in fact it's a micro-controller. A smaller scale controller

is only a little piece of what makes a PC, and just gives a subset of the usefulness of the Rapsberry Pi.

Despite the fact that the Arduino can be customized with little C-like applications, it can't run a full scale "working framework" and surely won't supplant your media focus at any point in the near future. Then again the Raspberry Pi, is a PC. In case you're perusing this site, I'm recently going to expect you recognize what that implies.You ought to select Arduino if:

- You have gadgets foundation else in the event that you are a starter and are intrigued to learn something that is hardware related and about its segments.

- Your venture is straightforward, particularly systems administration is not included.

- In voice controlled light, Burglar alert there's no contribution of programming applications so its to some degree like a gadgets extend.

- You are not a PC nerd who is very little keen on programming projects and Linux.

You ought to pick Raspberry Pi If:

- Your venture is unpredictable and systems administration is included.

- Your venture is more similar to a product application, similar to a VPN server or Webserver

- Do not have great information about gadgets.

- Have great information about Linux and virtual products.

In spite of the fact that they both have their own particular pro's and con's, yet they can both be used together to make the best utilization out of them. Like Pi can a collect pieces of data

over the system and can likewise take choices, and can order Arduino for taking exact activities like for e.g. turn an engine.

Conclusion:

many people say that Arduino is easy for learners to adapt to yet I don't agree with it completely, a tenderfoot can begin with any of them. Decision relies on upon what parts are required for your venture. For our situation we have utilized a heartbeat sensor which can be straightforwardly utilized with Arduinouno , though raspberry pi needs a computerized to simple converter subsequently we have chosen to run with Arduino uno as it's more solid and less complex to use on account of this venture .

CHAPTER-5 CONCLUSIONS

would like to conclude the project report keeping in mind the following things

- This is an approach for the future
- There is a lot of scope in improvement in work that has already been done in this field in both technology and the behaviour psychological understanding of the human nature
- It's the mixture of electronics ,computers and psychology and the simultaneous interactions of all these fields will certainly help different minds coming together in the growth of what could be another big step in automation ,understanding and simulation of human behaviour .

Future Scope

There is huge amount of scope in future for projects like these mainly because :-

1. Data and computing are going to become completely ambient

The scale of data and devices around us are going to become overwhelming. To the point where two or three generations down the line, it may be hard to explain what the "internet" even is. People will understand that it's basic infrastructure like electricity, but beyond that, who knows?

Literally everything is going to generate data, scrutinise insights and supplement it back to your environment. For example, this means that your wardrobe will work with the rest of your home and weather systems provided by third parties, so when you get dressed in the morning, the "suggested outfit" will be something warm enough for your home, your car and

your office (depending on your itinerary), but will need to be supplemented with a jacket if you plan to go anywhere warm (depending on your dress sense). All of this will be ambient

to you - it'll just be there. You won't have to put in any data (apart from allowing your home apps to access this), you'll just have to live life.

2. Jobs, and the nature of work are going to change

One of the third order effects of ambient data is that there will be a change the jobs needed - especially around the consumer. Much like we have personal financial advisors today, who help to tailor investment to one's net worth and personal risk profile, we'll be needing very much the same for someone's personal data.

In a world where people are able to sign into a hotel, for example, and their entire *"home profile"* can be pulled off the cloud to suit their room to their needs, it's more than likely that the data that tells people about that room will need to be tailored. For example, Tailor Swift, could choose a data scientists team who's focus should be on the shade i.e. Periwinkle Blue, exactly what she wants for her rooms when she is on tour. It means essentially that sales people - among others - will become more priced, since their role of understanding large markets, and targeted people in general will be put on to other roles. It is now being obvious about the *market/psychology* hybrid is that in the upcoming years it is going to be in great demands.

Fig 5.1

3. Ownership will change

Related to the above example, being able to customize a room based on someone's cloud preferences effectively means that the person no longer needs to own the room. Now adays music ownership has now become a product (which in some markets is even not required), physical spaces will grab more attention rather than owning. This will be ultimately a big change in how we think about things culturally - being able to buy a home is still a status symbol across many cultures. What's going to change is that access to the best homes is going to work as a similar proxy - much like Uber and Uber Black is used as a proxy for wealth.

There are huge changes ahead for how we think about the future - and this is only from a social vantage point. There are likewise huge changes that how we consider architecting solutions IoT friendly and to better incorporate with our general surroundings.

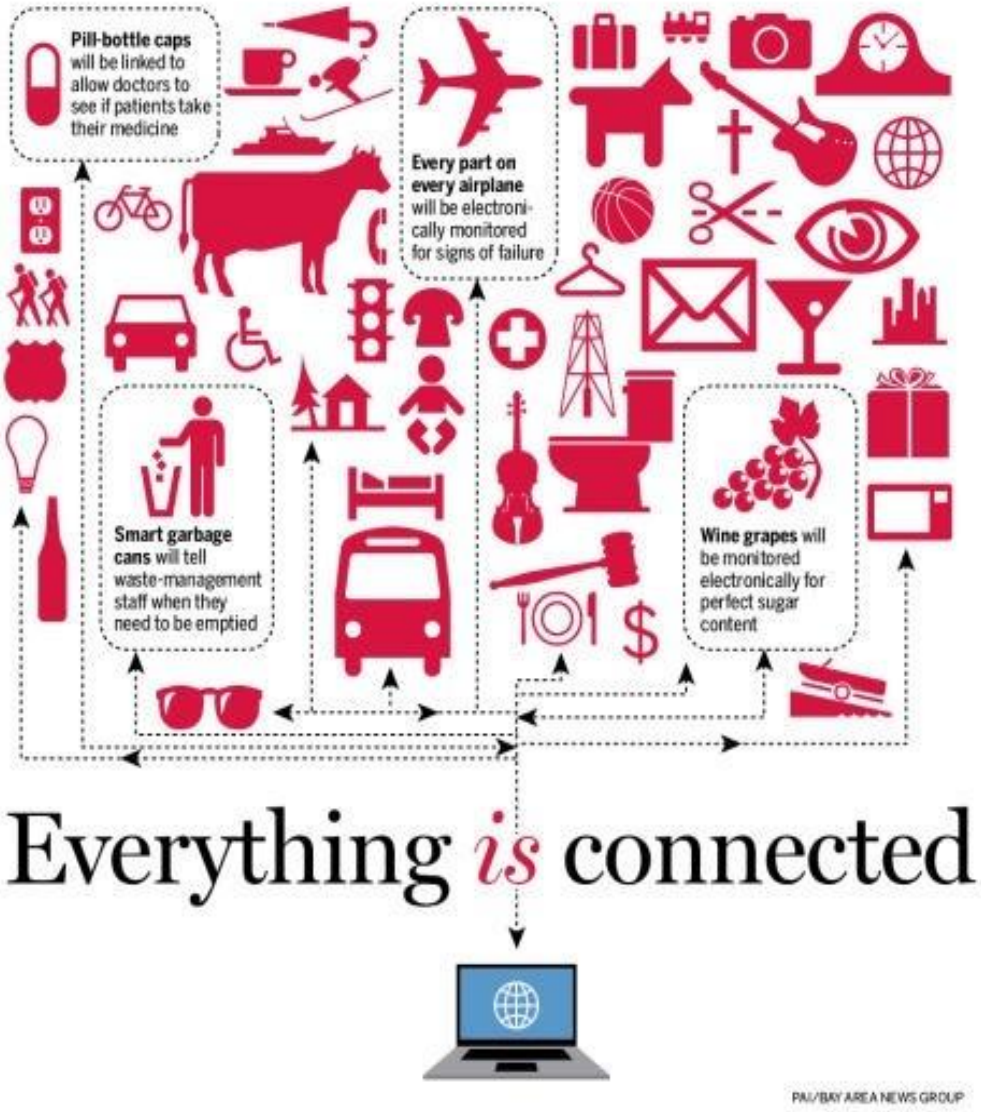

Pill-bottle caps will be linked to allow doctors to see if patients take their medicine
Every part on every airplane will be electronically monitored for signs of failure
Smart garbage cans will tell waste-management staff when they need to be emptied
Wine grapes will be monitored electronically for perfect sugar content
Everything is connected
PAUBAY AREA NEWS GROUP

Fig 5.2

Applications

How People Are Actually Using the Internet of Things

Fig 5.3

Technology that expands security. Individuals need to be protected at home. Here, there are really numerous IoT answers for this. For example, one structure called Presence changes old Android and iPhones contraptions into turning home cameras. Programming is being utilized, which interfaces your old telephone with the PC or current PDA's working camera for a review of ranges in your home. Different organizations are building more thorough arrangements. For example, Microsoft and SmartLabs have presented a unit that enables individuals to remotely control movement sensors and reconnaissance cameras at home utilizing the Internet Protocol. Essentially, observing their homes from wherever they are—to keep a beware of an elderly parent or wiped out kid additionally in their nonattendance who goes into the house . Apple's HomeKit and in addition Google's Nest are taking a shot at innovations that'll help an individual observing home security frameworks utilizing administrations as of now gave.


Hey Siri,
Turn off my lights.
Now Works With Apple® HomeKit
Add convenience and simplicity to everyday life by using Siri® to control your lights
Works with Apple HomeKit

Fig 5.4


Locks, lights, cameras, doors,
thermostats, plugs, switches
Secure pairing
Control individual devices
Group devices into scenes
Siri integratio

Fig 5.5

Fig 5.6

Apps that quantify the self. Its the interesting data defining people's story and grab their attention. We are curious about knowing—in respect of Body Mass Index, emotional

intelligence, etc. Pick any point when it comes for qualifying and people obviously will show their interest. So it's not astounding that self-measurement is a standout amongst the most energetically downloaded IoT applications at home. For instance, by looking at ones every day action and dozing designs and after a basic examination to comprehend the information one can self-measure. The devices that do this, on a very basic level wristbands with embedded sensors and programming, are the buyer of the Internet-enabled things that have expelled the speediest.

Services that advance our machines. Individuals are presently getting a charge out of IoT administrations and indicating less intrigue where they need to work physically. A standout amongst the most prominent projects—turning on inside lights when the sun is setting—is a decent case of how keen, associated gadgets can be enhanced to spare individuals time and cash. New supplies like warmers, ventilation systems, and different gadgets too that utilizations power, are programmed flexible ones according to the prerequisites of the general population.

Fig 5.7

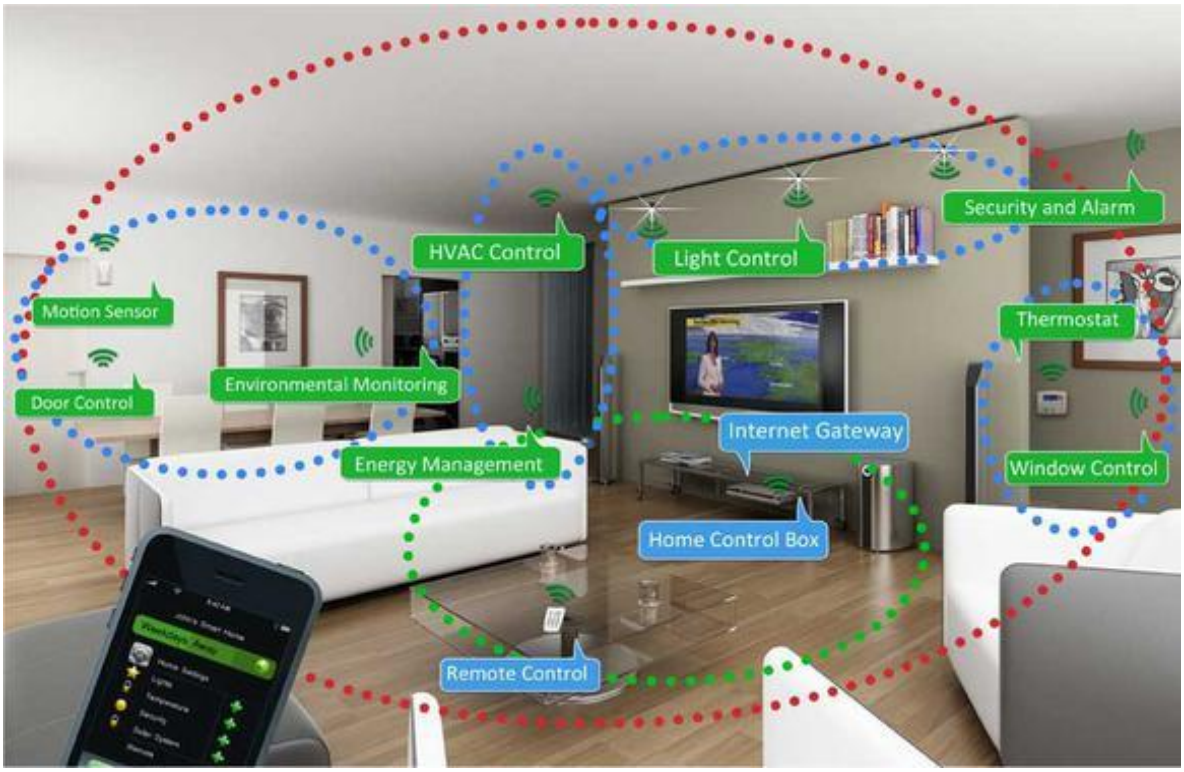
More investments are being made to help add more sensors and other internet technologies to domestic appliances—by established giants such as General Electric and Whirlpool, and many startups like Chai Energy—suggested that the growing supply will lead to even greater

demand. This has completely brought up an idea of understanding ones own preferences and needs by using devices and letting them tracking ones behaviour and mood.

Fig 5.8

Creative approaches to improve day by day encounters. Few individuals can stand to burn through a large number of dollars on putting sensors and custom-incorporated innovation with their homes (as Microsoft author Bill Gates is said to have finished with enormous PC screens that show acclaimed photographs and workmanship as people meander around his Seattle-go home).With an expansion sought after of Internet of Things has turns out to be

more inescapable, in truth everybody is encountering in their everyday life but more to come in nonsensical costs. These could be IoT stages that partner clever devices and sensors by taping tangible parts of our condition like temperatures, sounds and visuals to expand each minutes. Phillips Hue Lighting and Weather Channel are the most attractive single projects associated with the framework where there's web empowered lights handing blue over indicated rooms when it downpours. With living administrations, the parts are related over the web, additionally can cooperate by utilizing sensor innovation. Not just this there are significantly more ways that this experience-upgrading innovation can be utilized. For example, a writer who might want centering with customary music and standard lighting won't have to physically get up and reveal those upgrades; the diverse contraptions in the room can activate those settings normally. This personalization addresses a yearn for innovation encounters that make homes feel particular. The human-focused applications that are so well known in our specimen of early IoT adopters for the most part identify with home exercises. In any case, the bigger pattern—of customized administrations that take up habitation nearby us, in a manner of speaking, and gain from our practices—is setting freethinker. Individuals at home similarly individuals working will desire for this. So perhaps the best approach to consider these human-mindful home applications is that we're looking through a peephole. What we're getting a look at now are computerized administrations that will progressively live with us at home, at work, anyplace later on.


Security and Alarm
HVAC Control
Light Control
Motion Sensor
Thermostat
Environmental Monitoring
Door Control
Internet Gateway
Energy Management
Window Control
Home Control Box
Remote Control

Lastly, we would like to conclude by saying this that there are a lot of emotions that humans have in built. Emotions are one of the way to depict ones mood. Be it facial expression or the way that person is talking can help us trace out what actually that person is going through inside. Every human being must have two different faces which offcourse is very essential, one which you have for people i.e. in public and one which you have for yourself i.e. in private, so sometimes people pretentious and are fake about their feelings. So to bring out people's real emotions is what we have tried to do in our project. By analysing human reaction in a particular scenario which obviously won't be fake while watching a movie will definitely help us to gather us some information about the movie(i.e. whether the movie was good, bad on the basis of their reaction). This would help us to have real opinions about the movie which sometimes might happen to note down fake opinions when people who are watching aren't interested. So for avoiding this fake reviews we, in our project have used sensors. these sensors have been either on sitting chairs or we'll be providing a wrist band to those who are going to watch this movie. Their emotions could have also been traced by an eye tracker i.e. providing each one of them with a goggles that probably would have sensors in it for tracing emotions at different scenes in the movie. Facial expression does help us to read the emotions of humans but better than that human body language helps us to read us more in an accurate way.

By analysing everyone's emotions with the help of the sensor based wristband we will altogether compile their reactions and finally reveal that how was the movie.
According to the research it has been found that there are over twenty-one different emotional expression that human faces can make. Emotions like affection, anger, angst, anticipation, anxiety, confidence, contempt, apathy, arousal, awe, boredom, contentment, courage, curiosity, depression, desire, , disgust, passion, pity, pleasure distrust, ecstasy, embarrass, empathy, hope, horror envy, euphoria, fear, frustrate, gratitude, grief, guilt, happy, hatred, , humiliation, Joy, love, panic, , pride, remorse, resentment, anguish, annoyance, sad, self-confidence, shock, shy, sorrow, wonder, despair, disappointment, worry.

Emotions also in our day to day life: Literally everything is going to generate data, scrutinise insights and supplement it back to your environment. For example, this means that your wardrobe will work with the rest of your home and weather systems provided by third parties, so when you get dressed in the morning, the “suggested outfit” will be something warm enough for your home, your car and your office (depending on your itinerary), but will need to be supplemented with a jacket if you plan to go anywhere warm (depending on your dress sense). This is an approach for the future. There is a lot of scope in improvement in work that has already been done in this field in both technology and the behaviour psychological understanding of the human nature. It’s the mixture of electronics ,computers and psychology and the simultaneous interactions of all these fields will certainly help

different minds coming together in the growth of what could be another big step in automation ,understanding and simulation of human behaviour .

- What motivated us for this project was It is impossible to fake involuntary gestures and mental processes
- Diplomacy is a necessary evil
- Predict the result of your hard work

REFERENCES

1. https://hbr.org/2015/10/how-people-are-actually-using-the-internet-of-things
2. https://www.google.co.in/search?q=abstract&safe=active&gws_rd=cr,ssl&ei=nBlRWPyECMnHvgSc97bIBQ&safe=active#safe=active&q=abstract+on+moview+reviews+using+iot
3. https://en.wikipedia.org/wiki/Internet_of_things
4. Detecting Direction of Movement Using Pyroelectric Infrared Sensors by Jaeseok Yun, Member, IEEE, and Min-Hwan Song.
5. Target Detection and Classification Using Seismic and PIR Sensors-Xin Jin, Student Member, IEEE, Soumalya Sarkar, Asok Ray, Fellow, IEEE, Shalabh Gupta.
6. Human infrared signal recognition using single PIR detectorLinhong Wang Chongqing College of Electrical Engineering Chongqing, China.
7. Infrared Sensors Microcontroller Interface System for Mobile Robots-Matijevics, Polytech Eng. Coll. of Subotica.
8. http://circuitdigest.com/article/arduino-vs-raspberryp-pi-difference-between-the-two
9. https://www.google.co.in/search?q=difference+between+Ardiuno+and+Rassberry+pi&gws_rd=cr,ssl&ei=FwtRWPHIEMf38QXd1L6wCg&safe=active
10. http://www.makeuseof.com/tag/arduino-vs-raspberry-pi-which-is-the-mini-computer-for-you/
11. Sensor based obstacle avoidance and mapping for fast mobile robots-Gourley, C. Dept. of Electr. &Comput. Eng., Tennessee Univ., Knoxville, TN, USA
12. Obstacle Avoiding Robot – A Promising One-Rakesh Chandra Kumar , Md. Saddam Khan , Dinesh Kumar ,Rajesh Birua ,Sarmistha Mondal , ManasKr. Parai B.Tech students, Dept. of ECE, Siliguri Institute Of Technology, Sukna ,Darjeeling-734009(W.B), India
13. Design and Development of Smart Robot Car for Border Security-Khushwant Jain, Vemu Suluchana, Centre for Development of Advanced Computing Mohali, Punjab, India.
14. http://makezine.com/2015/12/04/admittedly-simplistic-guide-raspberry-pi-vs-arduino/
15. https://www.quora.com/Which-is-better-Arduino-or-Raspberry-Pi

16. https://www.quora.com/What-are-the-differences-between-Arduino-and-Raspberry-Pi
17. https://imotions.com/blog/eye-tracking/
18. http://www.google.com/patents/WO2015081325A1?cl=en
19. https://www.google.co.in/search?q=arduino+image&safe=active&source=lnms&tbm=isch&sa=X&ved=0ahUKEwiy4p2G-PLQAhWHqo8KHaayAGgQ_AUICCgB&biw=1242&bih=602#imgrc=HmMdiyobGmkymM%3A
20. https://www.google.co.in/search?q=arduino+image&safe=active&source=lnms&tbm=isch&sa=X&ved=0ahUKEwiy4p2G-PLQAhWHqo8KHaayAGgQ_AUICCgB&biw=1242&bih=602#imgrc=HmMdiyobGmkymM%3A
21. http://www.ti.com/lit/an/slaa280a/slaa280a.pdf
22. https://www.youtube.com/watch?v=RCnuk0e85HE
23. https://www.google.co.in/search?q=pin+diagram+pulse+sensor&safe=active&source=lnms&tbm=isch&sa=X&ved=0ahUKEwj7uKbsmPHQAhUKRY8KHfy0BP8Q_AUICCgB&biw=1242&bih=602&dpr=1.1
24. https://www.google.co.in/imgres?imgurl=http%3A%2F%2Fwww.circuitstoday.com%2Fwp-content%2Fuploads%2F2008%2F07%2Fmissing-pulse-detector-circuit.JPG&imgrefurl=http%3A%2F%2Fwww.circuitstoday.com%2Fmissing-pulse-detector-circuit-using-ne555&docid=6WLpWU8GtRr7JM&tbnid=qezPHnyPnvmFhM%3A&vet=1&w=545&h=342&safe=active&bih=602&biw=1242&q=pin%20diagram%20pulse%20sensor&ved=0ahUKEwiqqc6Am_HQAhUMro8KHaVJA88QMwgcKAEwAQ&iact=mrc&uact=8
25. https://www.google.co.in/imgres?imgurl=http%3A%2F%2Fwww.14core.com%2Fwp-content%2Fuploads%2F2015%2F07%2FHEart-Rate-Sensor-Diagram-Pinout.jpg&imgrefurl=http%3A%2F%2Fwww.14core.com%2Fhow-to-wire-the-heart-beat-sensor-with-processing-code-on-arduino%2F&docid=IaTxydlBywbDKM&tbnid=wKX73d_ighFniM%3A&vet=1&w=391&h=205&safe=active&bih=602&biw=1242&q=pin%20diagram%20pulse%20s

ensor&ved=0ahUKEwiqqc6Am_HQAhUMro8KHaVJA88QMwgfKAQwBA&iact=mrc&uact=8

26. https://www.google.co.in/search?sclient=psy-ab&safe=active&biw=1242&bih=602&q=how+to+connect+pulse+sensor+to+arduino+to+arduino&oq=how+to+connect+pulse+sensor+to+arduino+to+arduino&gs_l=serp.3...36.1571.2.1949.9.9.0.0.0.0.278.2071.0j2j7.9.0....0...1c.1.64.serp..0.7.1629...0i22i30k1j33i160k1j33i21k1.6plW0AflWOQ&pbx=1&cad=cbv&bvch=u&sei=K-9PWMyjAYiNvQTTt6ngDw
27. http://arduinolearning.com/hardware/arduino-and-a-pulse-sensor.php
28. https://github.com/WorldFamousElectronics/PulseSensor_Amped_Processing_Visualizer/blob/master/EarClip.png
29. http://pulsesensor.com/pages/code-and-guide
30. https://github.com/WorldFamousElectronics/PulseSensor_Amped_Arduino
31. https://github.com/WorldFamousElectronics/PulseSensor_Amped_Arduino
32. http://pulsesensor.com/
33. https://docs.google.com/document/d/1FVFffuKD9OnkTOwxs3dVaxp5LYb4S1aj65MS6lvIZbA/edit
34. https://github.com/WorldFamousElectronics/PulseSensor_Amped_Processing_Visualizer/graphs/contributors
35. https://github.com/WorldFamousElectronics/PulseSensor_Amped_Arduino/blob/master/pics/cablehookup.png
36. https://docs.google.com/document/d/1FVFffuKD9OnkTOwxs3dVaxp5LYb4S1aj65MS6lvIZbA/edit
37. http://www.instructables.com/id/Simple-DIY-Pulse-Sensor/
38. http://www.instructables.com/id/Pulse-Sensor-With-Arduino-Tutorial/
39. https://www.google.co.in/search?q=pin+diagram+pulse+sensor&safe=active&gws_rd=cr,ssl&ei=s-xPWJzhDcz1vgTWkIvADQ&safe=active
40. http://www.google.co.in/patents/US20130339433
41. https://www.google.co.in/search?q=sensors+that+can+be+used+to+detect+action+reaction+through+eye&safe=active&gws_rd=cr,ssl&ei=giw1WOKyFMXXvATbgp3ID

A&safe=active#safe=active&q=sensors+that+can+be+used+to+detect+action+reaction+through+eye+for+movie+reviews
42. https://en.wikipedia.org/wiki/Stimulus_(physiology)
43. https://www.element14.com/community/thread/35118/l/sensor-to-detect-human-presence?displayFullThread=true
44. https://www.google.co.in/search?q=sensors+that+can+be+used+to+detect+action+reaction+through+eye&safe=active&gws_rd=cr,ssl&ei=giw1WOKyFMXXvATbgp3IDA&safe=active
45. http://www.sumeetinstruments.com/shop/index.php?route=product/product&product_id=306
46. http://www.electroncomponents.com/PIR-motion-sensor-module
47. http://www.electroncomponents.com/PIR-motion-sensor-module
48. https://www.google.co.in/search?q=cost+of+High+Resolution+Camera&safe=active&gws_rd=cr,ssl&ei=SSs1WLDvOMTZvgTChJCAAQ&safe=active
49. https://www.google.co.in/search?q=cost+of+E4+Sensors&safe=active&gws_rd=cr,ssl&ei=KCs1WKvBJYf7vgTdlLuwBw&safe=active
50. https://www.google.co.in/search?q=price+of+PIR+Sensors&safe=active&gws_rd=cr,ssl&ei=ESs1WOaWNYPMvgSFmKrgDg&safe=active
51. www.eduweb.vic.gov.au/edulibrary/.../**research**/.../**ResearchHumanLearning**-rpt
52. www.cs.columbia.edu/~jebara/papers/icvs.pdf
53. www.google.com.gt/patents/US6231519
54. **eqradio**.csail.**mit**.edu
55. http://www.google.com/patents/WO2015081325A1?cl=en
56. https://imotions.com/blog/eye-tracking/

11
29-04-17

Time : 1:10 afternoon
Date : 29th April 2017

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
LEARNING RESOURCE CENTER

PLAGIARISM VERIFICATION REPORT

Date: 28th April 2017

Type of Document (Tick): Thesis | M.Tech Dissertation/ Report | B.Tech Project Report ✓ | Paper

Name: ① AJINKYA SINGH ② ROMA SINGH Department: IT

Enrolment No. ① 121431 ② 131412 Registration No. _____

Phone No. 9418427200 / 7831936485 Email ID. ajinkya.singh94@gmail.com romasingh.075@gmail.com

Name of the Supervisor: Dr Pradeep Kr. Singh.

Title of the Thesis/Dissertation/Project Report/Paper (In Capital letters): MOVIE REVIEW ANALYSIS BASED ON HUMAN REACTION AND ACTION USING EYE TRACKER / HAND BAND USING IOT.

Kindly allow me to avail Turnitin software report for the document mentioned above.

(Signature)

FOR ACCOUNTS DEPARTMENT:

Amount deposited: Rs. 600/- Dated: 28/4/17 Receipt No. CRV 17074/3961
(Enclosed payment slip)

(Account Officer)

FOR LRC USE:
The above document was scanned for plagiarism check. The outcome of the same is reported below:

Copy Received on	Report delivered on	Similarity Index in %	Submission Details	
11:00 AM 1/5/2017	12:00 PM 1/5/2017	28%	Word Counts	8499
			Character Counts	52475
			Page counts	54
			File Size	2.12M

Checked by
Name & Signature

Librarian

LIBRARIAN
LEARNING RESOURCE CEN
Jaypee University of Information Techn
Waknaghat, Distt, Solan (Himachal Pr
Pin Code: 173234

Submission Info

SUBMISSION ID	807645825
SUBMISSION DATE	01-May-2017 12:15
SUBMISSION COUNT	1
FILE NAME	Project_Report_Ajinkya...
FILE SIZE	2.12M
CHARACTER COUNT	52475
WORD COUNT	8499
PAGE COUNT	54

ORIGINALITY

OVERALL	28%
INTERNET	21%
PUBLICATIONS	7%
STUDENT PAPERS	93%

GRADEMARK

LAST GRADED	N/A
COMMENTS	0
QUICKMARKS	

LIBRARIAN
LEARNING RESOURCE CENTER
Jaypee University of Information Technology
Waknaghat, Distt, Solan (Himachal Pradesh)
Pin Code: 173234