IEEESEM

Design and fabrication of an artificial intelligent office professional

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Executive summary
This is an intelligent system, to regulate the inflow of people in the office by informing the outside visitors of the presence of the inner visitors in the office and also initiate the terms of visitation. It has the ability to transcend information through wireless medium and also shows the absence and presence of the boss, in addition the system was developed to access and differentiate the number of people within the premises from those that had left the premises, to inform those waiting outside on the number of those still within the premises. conclusively time elapse program was developed into the system to enact discipline .
The keywords: infrared, amplifier, orderliness and microcontroller

INTRODUCTOIN

The impact of orderliness in a society is a tool that has developed and harness the virtues of a society or nation Riami et al, *(2019)*.

Successful Calculated steps in buildings structures lies on the potential strength of proper regulation either in commands or control which falls within the subject and object in related to appropriate time factor Teni-Houten et al. (2005), concurrency of activity that falls outside a precision time domain leads to catastrophe, every sequential occurrence of nature happens at the right precision time and position, this is just the working principle of nature, any society that alter or shift time and position from their precision point is bound to fail, this phenomenon goes along with every successful human.

Most part of the third world, where time and position has been thrown out of their precision point has result to: hunger, poverty, corruption, war etc. Mwije, Solomon, (2013).

A functional organization is a collectiveness of human, structures and equipment, this three subject have to work together for a successful outcome, all this subject has to work with precision time and position to generate a working eco – system Pitts et al (2008). .

With this phenomenon of eco- system, a friendly environment will be created to harmonize this subject, thereby producing and projecting a progressive trend in the nation economic value.
In reference to the above context there is a need to create a non – emotion figure which cannot be altered by human activity as an ‘’intermediary’’, to

inhibit this phenomenon especially into a society that has lost their norms of value by disregarding precision in terms of time and position. Kouladoum, Jean-Claude, (2022).

To this end a device was developed and created "Artificial Intelligent Office Professional "with a scope within the jurisdiction of offices, election event and institution to inhibit protocol that will reform the decoy of the organization into the subject principle.

1.1 Problem Statement

a. The existing artificial intelligent system in offices are to transfer data from email and calls center systems into a system of record example updating costumers files with address changes or services addition, Al-Mushayt, (2019) replacing lost credit or ATM cards, reaching into multiple system to update records and handle customers communication Androutsopoulou et al., (2019) reconcile failures to charge for services across billing systems by extracting from multiple document types and reading legal contractual document to extract provision using natural language processing but much focus has not been directed to artificial intelligent to act as office professional to aid the office professional practice, in which this work context has come to fill the gap.

b. Some visitors exhibit some nonchalant attitude at the gateway to the boss office instead of concentrating on the business that brought him to the venue, this system stand to correct and initiate discipline, thereby enact correctional measures in the work place of the office professional.

c. The office professional faces lot of challenges in attending to large document assign by the boss and at the same time attending to large number of visitors and also going for an errand for the boss, this three factors can reduce the efficiency and positive impact of the office especially when the boss wanted an immediate answer to his assignment.

d. Whenever a crime is committed in an office, it is very difficult for the law enforcement to ascertain the number of those that committed the crime, secondly supposing there are ailment, sickness, unconsciousness or death occurs in an office it is very difficult to ascertain it quickly in an enclosed office,

e. Most of the time an appropriate number of visitor with the boss in the office cannot be ascertain by the office professional outside the close doors, this result to wrong ushering of visitors into the boss office, due to its timing schedule in its office activities.

1.2 Significant of study

The system has a lot of positive impact in the coordination of the office of the boss and that of the office of the office professional:

a. It will help to reduce stress and fatigue, by carrying out some of the activity that would have being handled by the boss of the office and its office professional thereby increase the efficiency of the office.

b. It will regulate the inflow and outflow of visitor easily to avoid congestion in an office and also reduce the nonchalant visitors attitude by enact correctional measures in the office.

c. It will initiate a proper communication environment within the boss, office professional and visitor, by indicating measures on how the office is operated, this will guide the movement of the visitors in an offices

d. It showcase procedures and direction for orderliness which help to coordinate the affairs of the office, as it ascertain the number of visitor with the director, in order to avoid wrong ushering of visitor into the boss office

It also makes sure, that boss concluded his meeting with his visitors before allowing the outside visitors to come inside, in an organized manner.

e. The system gives room for group passage and individual passage depending on a personal relationship

It will help to initiate security measures in the office and give security personnel security data, by ascertain the number of people that committed a crime in an incident that occurs in an office, it also gives the evidence of crime and innocence in a crime incident, to make the security personnel work effective.

1.3 Aim and Objective

Aim

Design and Fabrication of an Artificial Intelligent office professional in both Government and Private Establishment

Objective

To examine the distance of its transmission power

To examine its time frame to accept multiple people sequentially and individual

To determine the speed of motion in respect to the time of detection

To determine the time between the detection response time and activation time

2.0 Literature Review

Implications of the use of artificial intelligence in public governance

The expanding use of Artificial Intelligence (AI) in government is triggering numerous opportunities for governments worldwide. Traditional forms of service provision, policy-making, and enforcement can change rapidly with the introduction of AI-technologies in government practices and public-sector ecosystems. For example, governments can use AI-technologies to improve the quality of public services (Montoya & Rivas, 2019; Ojo, Mellouli, & Ahmadi Zeleti, 2019; Toll, Lindgren, Melin, & Madsen, 2019), to foster citizens' trust (Dwivedi et al., 2019), and to increase efficiency and effectiveness in service delivery (Gupta, 2019). AI may also be used by governments to generate more accurate forecasts and to simulate complex systems that allow experimentation with various policy options (Margetts & Dorobantu, 2019). Value can be created in multiple government functional areas, such as decision support, transportation, public health, and law enforcement (Gomes de Sousa, Pereira de Melo, De Souza Bermejo, Sousa Farias, & Oliveira Gomes, 2019).

At the same time, AI use in government creates challenges. While the use of AI in government may increase citizens' trust towards governments, it may also *reduce* citizens' trust in government (Al-Mushayt, 2019; Gupta, 2019; Sun & Medaglia, 2019) and government decisions (Sun & Medaglia, 2019). This decrease may be due to a violation of citizens' privacy or a lack of fairness in using AI for public governance (Kuziemski & Misuraca, 2020). Moreover, additional challenges arise from the lack of transparency of black-box systems, such as unclear responsibility and accountability, when AI is used in decision-making by governments (Ben Rjab & Mellouli, 2019; Dignum, 2017, Dignum, 2018; Wirtz, Weyerer, & Geyer, 2019). These realities raise the stakes for governments since failures due to AI use in government may have strong negative implications for governments and society.

Research on AI has interested scholars for decades (Natale & Ballatore, 2020; Rossi, 2016; Wirtz & Müller, 2019). Some streams in AI research have a long and rich history (Desouza, Dawson, & Chenok, 2020), such as research on expert systems (Hurley & Wallace, 1986), agent-based systems (Oliveira & Cardozo, 1977), algorithms (Horowitz & Sahni, 1978; Lynch, 1996) and chatbots (Shawar & Atwell, 2003). Although AI is not a novel research discipline, AI research has received renewed attention in recent years due to its remarkable progress (Aoki, 2020) and increased policy attention (Kuziemski & Misuraca, 2020). However, various knowledge gaps still exist.

First, over the past few decades, the adoption of AI in the public sector has been slower than in the private sector (Desouza et al., 2020). As a result, attention paid to AI use in government has been more recent (Desouza et al., 2020). AI practices and digital transformation strategies from the private sector cannot directly be copied to the public sector because of the public sector's need to maximize public value (Fatima, Desouza, & Dawson, 2020). Compared to the private sector, there is less knowledge concerning AI challenges specifically associated with the public sector (Aoki, 2020; Wang & Siau, 2018; Wirtz, Weyerer, & Sturm, 2020).

Second, AI systems are becoming more complex and less predictable (Hernández-Orallo, 2014), and it is unclear for most governments how this affects public governance. In practice, most governments face limited understanding of the multifaceted implications for public governance brought about by the use of AI in government. Meanwhile, thought-leadership in the areas of governance and AI shrinks compared to the pace with which AI applications are infiltrating government globally. This knowledge gap is a critical developmental barrier as many governments wrangle with the societal, economic, political, and ethical implications of these transformations in AI (IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems, 2019).

Third, much of the existing AI research is technical in nature, studying specific technological problems and solutions in the computer science domain (Aoki, 2020). While various studies concerning AI use in government exist beyond the highly technical fields of study (e.g., Etscheid, 2019; Kankanhalli, Charalabidis, & Mellouli, 2019; Winter & Davidson, 2019), there is a scarcity of research on AI governance, policy, and regulatory issues (Thierer, Castillo O'Sullivan, & Russell, 2017; Wang & Siau, 2018). Furthermore, there is a lack of consensus on how to handle the challenges of AI associated with the public sector in the future (Wang & Siau, 2018; Wirtz et al., 2020). Wirtz et al. (2020, p. 826) state that AI governance and regulation needs to be addressed more comprehensively in public administration research. Although “researchers, practitioners, and policymakers are starting to pay attention to AI governance, policies, and regulatory issues” (Wang & Siau, 2018, p. 3; also see European

Commission, 2020; Kankanhalli et al., 2019), a systematic overview of the *implications* of AI use in government for *public governance* is still lacking.

3.0 Methodology

Artificial Intelligent Office Professional was based on two types of theory; (1) reactive theory and limited memory theory artificial intelligent

3.1 The reactive theory of Artificial Intelligent

The programmed of the system was written to generate a predictable outcome on the input it received, for instance any time it receives an input, it tells you whether to wait or to proceed depending on the situation of the environment.

3.11 Limited Memory Theory of an Artificial Intelligent

Limited memory artificial learns from the past and build an experimental knowledge by observing action or data. This type of artificial intelligent uses historical, observational data in combination with preprogrammed information to make prediction and perform complex classification task.
For instance, the system understands when there are number of visitors with the boss, that you are not allow to proceed or interfere even though one visitor still remains with the boss out of ten visitors that proceed in for a meeting, until the boss is left alone with nobody before it allow the next visitor to proceed.
The system uses time frame motion to predict relationship of visitors that proceed into the office.

3.2 Processed applied in the development

a. Material, Component and software analysis development to assess the possibility of the design and fabrication
b. Cost and material purchase
c. software language written implementation
d. Embedding of software program in the chip
e. Assemble and design of the component into well-organized structure into a function-able system
f. Initiate a suitable packaging for the system
g. Initiating test and result of the system

3.3 Material used

a. Programming language – Assembly Language
b. Compiler – MIDE -51
c. Computer
d. AT89c52
e. ADC 0804
f. HT12E and HT12D
g. 433 TX
h. MAX 232

3.4 Specification of component

3.41 Specifications for IR LED

- Forward current (IF) is 100mA (normal condition) and 300mA (max.)
- 1.5A of surge forward current
- 1.24v to 1.4v of forward voltage
- Temperature for storage and operation varies from -40 to 100 °C
- Soldering Temperature should not exceed 260 °C
- Power Dissipation of 150mW at 25°C (free air temperature) or below

- Spectral bandwidth of 45nm
- Viewing angle is 30 to 40 degree

3.42 Specification for AT89C52

Features:

- Compatible with MCS® -51Products
- 8K Bytes of In-System Programmable (ISP) Flash Memory – Endurance: 10,000 Write/Erase Cycles
- 4.0V to 5.5V Operating Range
- Fully Static Operation: 0 Hz to 33 MHz
- Three-level Program Memory Lock
- 256 x 8-bit Internal RAM
- 32 Programmable I/O Lines
- Three 16-bit Timer/Counters
- Eight Interrupt Sources
- Full Duplex UART Serial Channel
- Low-power Idle and Power-down Modes
- Interrupt Recovery from Power-down Mode
- Watchdog Timer
- Dual Data Pointer
- Power-off Flag
- Fast Programming Time
- Flexible ISP Programming (Byte and Page Mode)
- Green (Pb/Halide-free) Packaging Option

3.43 Specification for UA741

:
Specifications:

Slew Rate	0.5 V/µs
Gain Bandwidth Product	1MHz
Current - Input Bias	10nA
Voltage - Input Offset	1mV
Current - Supply	1.7mA
Current - Output / Channel	25mA
Voltage - Supply, Single/Dual (±)	10 V ~ 44 V, ±5 V ~ 22 V
Operating Temperature	0°C ~ 70°C

Package / Case	8-DIP (0.300", 7.62mm)
Weight	0.47g (0.017oz)

3.44 Specifications of HT12E

Features

· Operating voltage

- 2.4V~5V for the HT12A

- 2.4V~12V for the HT12E

· Low power and high noise immunity CMOS

technology

· Low standby current: 0.1mA (typ.) at V DD=5V

· HT12A with a 38kHz carrier for infrared transmission

Medium

Minimum transmission word

- Four words for the HT12E

- One word for the HT12A

· Built-in oscillator needs only 5% resistor

· Data code has positive polarity

· Minimal external components

· Pair with Holtek¢s 2^{12} series of decoders

· 18-pin DIP, 20-pin SOP package

3.5 Theory of operation

The infra-red sensor detect every movement of every person that goes across the door, it sends an analogue signal to the analogue to digital converter (ADC)

, the ADC convert the analogue signal to digital signal which was fed to the first microcontroller, due to the algorithm written on the microcontroller , the program execute commands and send data pending on the type of input it received, the data sent was received by the second microcontroller, the second microcontroller compute the information and displayed it on the liquid crystal display, the second microcontroller is connected to the max232 which in return the max 232 is connected to the computer through DB9 port.

3.51 Data transmission process

The switches are connected to the forth microcontroller, the switches are to control each subroutine in the program, in return the microcontroller obeys the instruction and execute the command, the microcontroller is connected to the decoder through it UART device, the decoder in return was connected to the RF transmitter module, the transmitter module transmits the data to a receiving device.

3.52 Data-Reception process

The data was received by the RF module from maximum distance of 100m radius, which was fed into the encoder; the encoder in return fed the third microcontroller, the microcontroller, in return the microcontroller compute the information as commanded and fed the second microcontroller, in return the second microcontroller compute the information and delivers it on the LCD display

3.53 INVERTER

The **power inverter** was developed by creating a frequency generating circuit in which the output was fed into the driver to boost the current through the current gain of the drivers, the output of the driver was fed to the power amplifiers, the output of the power amplifier was fed to the transformer, the transformer increased the alternative voltage to 220ACV, the inverter was interfaced with a microcontroller to monitor all parameters and execute instruction as commanded.

3.54 Block Diagram

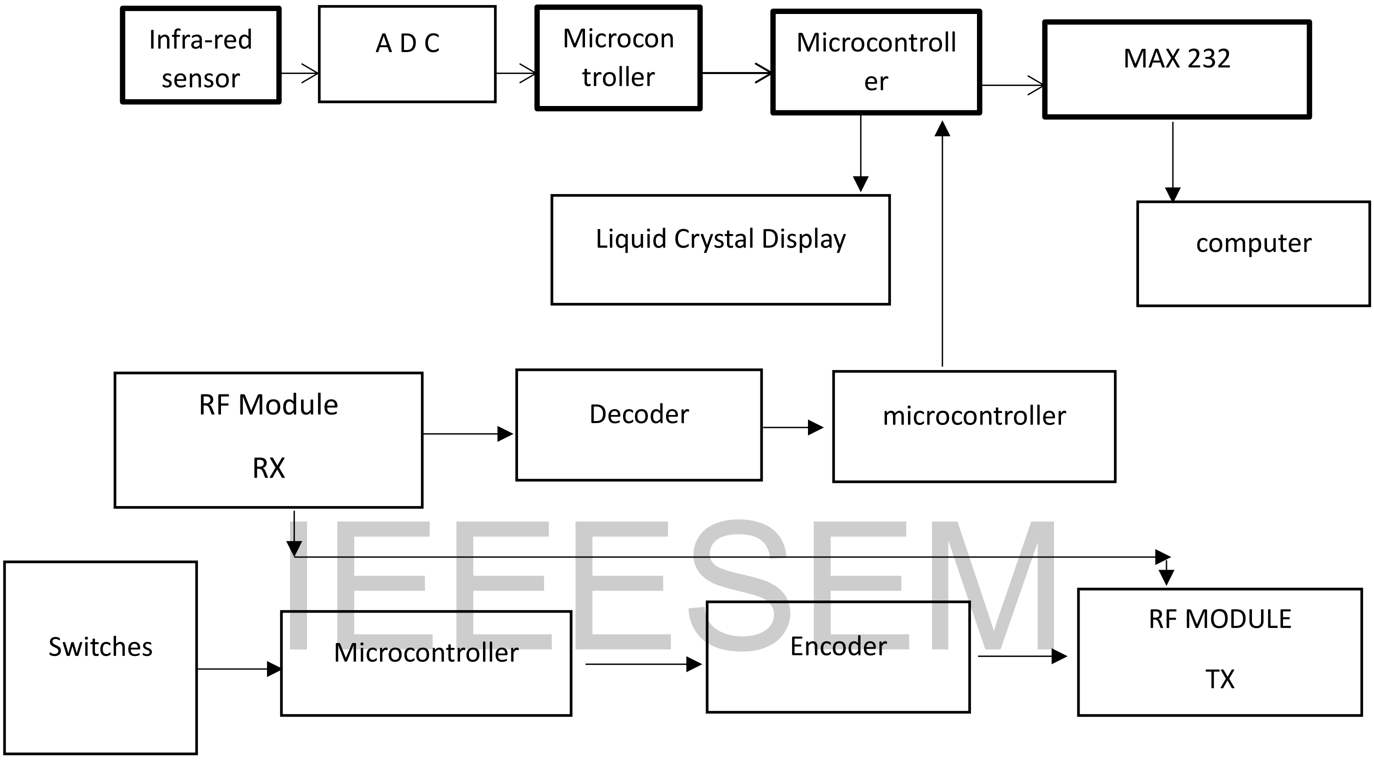

Fig 3.5a Block Diagram for Artificial Intelligent office professional

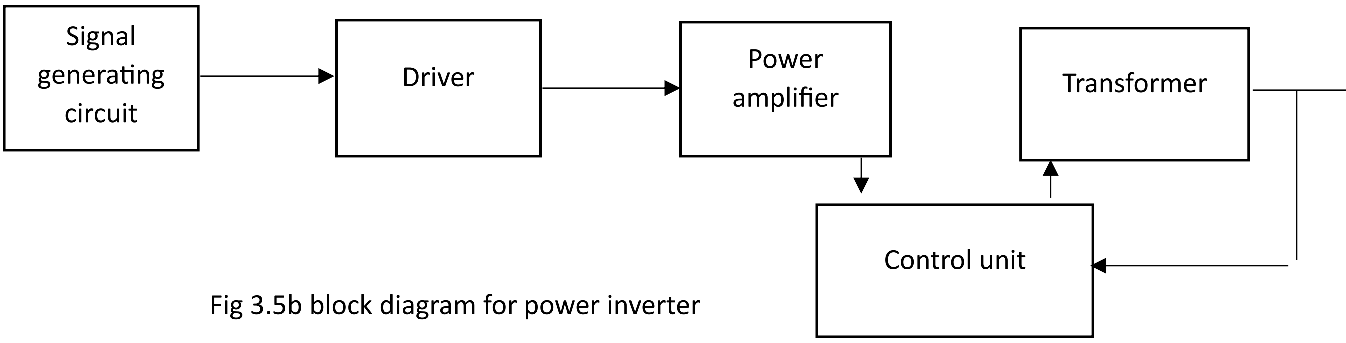

Fig 3.5b block diagram for power inverter

3.55 Concept of Drawing

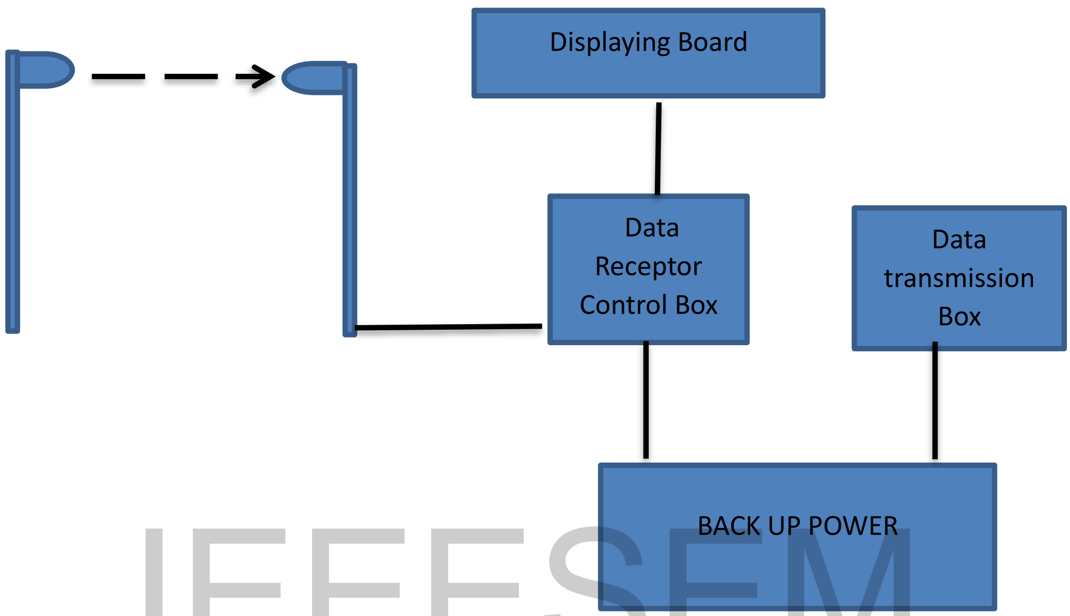

Fig 3.6a Block Diagram on concept for Artificial Intelligent office professional

3.6 Circuitry Design Modelling

The Component of Infrared Transmitter

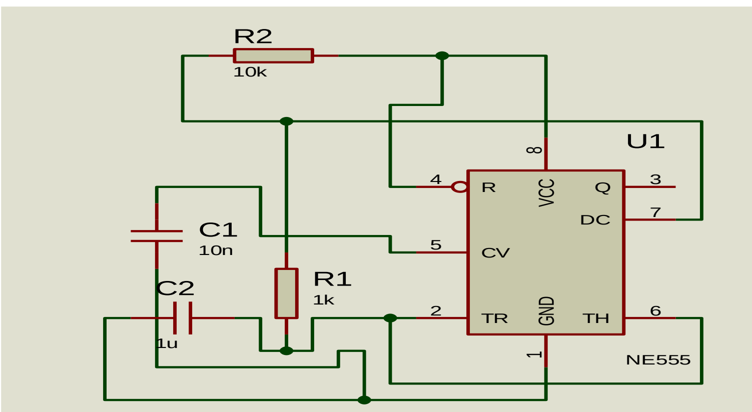

Fig 3.6a 555 timer circuitry

The frequency of the 555 timer used in the project = T $= \frac{1.44}{(R_1+2\ R_2)C} = \frac{1.44}{(1K\Omega+2\times10K\Omega)1\times10^{-6}} = 0.00063504Sec$ equ 3.61

Therefore $frequency = \frac{1}{T} = \frac{1}{0.00063504}$, thus frequency of the 555timer = 1574.70Hz equ 3.62

The positive peak voltage is

$\frac{1}{3}\ VCC\ voltage\ and\ the\ negative\ \ is\ \frac{2}{3}\ of\ the\ VCC\ Voltage$ equ 3.63

Thus the VCC voltage of the 555timer is 5Volt, therefore the positive peak voltage is $\frac{1}{3}\ of\ 5V\ which\ is\ \frac{5}{3}\ = 1.7V\ Peak\ to\ peak\ voltage$ equ 3.64

The output was fed to the input of common emitter transistor

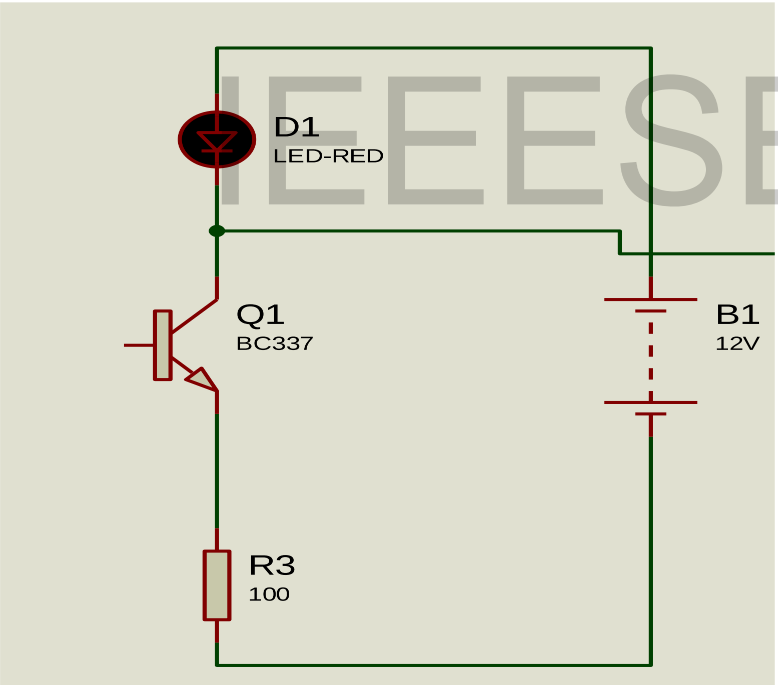

Fig 3.6b common emitter amplifier

C945 Transistor was used in the design to emit infra-Red ray

To achieve the output of the transistor we have to considered the gain of the transistor

Thus gain = A = $\frac{V_0}{V_{in}}$ = $\frac{R_C \| r_{ce}}{r_e + R_E}$ equ 3.65

r_{ce} $for\ silicon\ transistor = 100K\Omega$

The infra-red diode has 82.5Ω internal resistance at forward bias, thus the internal resistance of the infra-red emitting diode was used as the R_c in series with 470Ω resistor

The calculation for dynamic resistance r_e = $\frac{0.026V}{I_e}$ equ 3.66

To achieve $i_e = \frac{0.026V}{r_e}$ equ 3.67

Thus if $i_e = i_c$

If $I_b = \frac{V_{in}}{\beta(r_e+R_e)}$ equ 3.68

Thus if $I_c = \beta I_b$

Which means $I_c = \frac{V_{in}}{\beta(r_e+R_e)} \times \beta$ equ 3.69

$I_c = \frac{V_{in}}{(r_e+R_e)}$ equ 3.610

Thus if $i_e = i_c$

Therefore$I_e = \frac{0.026V}{r_e}$ equ 3.611

$\frac{0.026V}{r_e} = \frac{V_{in}}{(r_e+R_e)}$ equ 3.612

$\frac{r_e+R_e}{r_e} = \frac{V_{in}}{0.026V}$ equ 3.613

$\frac{r_e}{r_e} + \frac{R_E}{r_e} = \frac{V_{in}}{0.026V}$

$\frac{R_E}{r_e} = \frac{V_{in}}{0.026V} + 1$ equ 3.614

$\frac{R_E}{r_e} = \frac{V_{in}+0.026V}{0.026V}$

$r_e = \frac{R_E \times 0.026V}{V_{in} + 0,026V}$ equ 3.615

Where $V_{in} = 1.7V$ and $R_E = 100\Omega$

Thus $r_e = \frac{100\times0.026V}{1.7V+\ 0,026V}$ equ 3.616

$r_e = \frac{2.6}{1.726} = 1.506\Omega$ equ 3.617

Back to formula

Let $R_C = the\ resistance\ of\ the\ infrared\ transmitter$

Calculation for internal resistance

Specification: forward voltage 1.4V, forward current 100mA

Rail voltage 5V

Therefore internal resistance = $\frac{5-1.4}{100^{-3}}$ = 36Ω

Thus $R_C = 36\Omega$

gain = A = $\frac{V_0}{V_{in}} = \frac{R_C \| r_{ce}}{r_e + R_E}$ equ 3.618

$R_C \| r_{ce} = \frac{R_C \times r_{ce}}{R_C + r_{ce}}$ equ 3.619

Where $\frac{36 \times 100000}{36+ 100000}$ equ 3.620

$R_C \| r_{ce}$ = 35.98

A = $\frac{V_0}{1.7} = \frac{35.98}{1.506\Omega + 100}$

$V_0 = \frac{1.7 \times 35.98}{1.506\Omega + 100}$ equ 3.621

V_0 = 0.602V

Therefore, voltage across the IR LED is 5V - 0.61V = 4.39V

A = gain = $\frac{0.602}{1.7}$ = 0.35446

Therefore, collector current will be

$I_c = \frac{V_{in}}{(r_e + R_e)}$

Thus when V_{in} = 1.7V

Therefore $I_c = \frac{V_{in}}{(r_e+R_e)}$ equ 3.622

= $\frac{1.7V}{(1.506+100\ )}$ = $\frac{1.7V}{(100{,}055)}$ = 0.01674A = 16.7mA

Therefore the power emitted from the IR LED = P = I^2R

Thus power emitted = $0.0167^2 \times 36 = 0.0100975Watt$

Intensity is power per unit area

The area stands to cover the distance between the transmitter of the infrared ray and the receptor of the infrared ray

Where area = $4\pi r^2$

Radius = 100cm = 1m = one meter

Thus intensity = H = $\frac{P}{4\pi r^2}$ = $\frac{0.0100975}{4\pi r^2}$ = $\frac{0.0100975}{4\times3.14\times100cm^2}$ = $\frac{0.0100975}{12.568}$ = 0.0008179$^{W}/_{m^2}$ equ 3.623

Thus infrared transmitted power over area = 0.0008034$^{W}/_{m^2}$

INFRARED RECIEVER

The Component of Infrared Receiver

Component used is photo diode

Active area = $0.81\ \times 10^{-2}cm^2$

Convert to cm to m

$\frac{0.81\ \times10^{-2}}{100}$ = 0.000081m^2

Responsivity of the photo diode towards the 850nm infrared waveform is 0.43

Thus photo diode current = $I_p = P_1\ \times\ R_\emptyset$

$R_\emptyset$ = Responsivity

I_p = photo diode current

P_1 = surface incident power

Thus $I_p = P_1\ \times\ R_\emptyset$

Power = area × $intensity$

Where power = $0.0008034W/_{m^2}$ × 0.000081m^2 = 65 × 10^{-9}Watt

66 × 10^{-9}Watt falls on the active area of the photo diode

To achieve the current going through the photo diode

Thus $I_p = P_1 \times R_\emptyset$

I_p = 65 × 10^{-9}Watt × 0.43 = 27.0 × $10^{-9}amp$ equ 3.625

An inverted operational amplifier was used in the design in which it had a negative feedback resistor of resistance of 1mega ohms

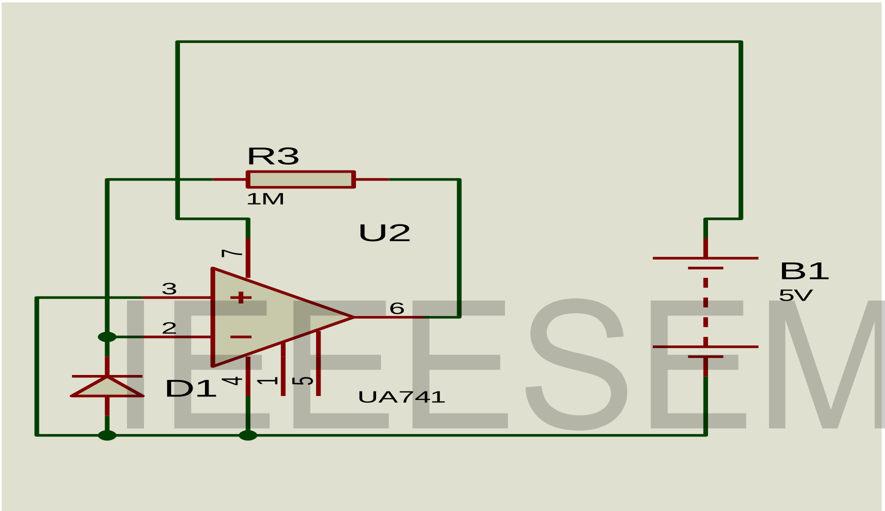

Fig 3.6c inverter operational amplifier

Where R = 1MΩ

Thus output voltage

$V_0 = I_p \times R$

$V_0 =$ 27.0 × 10^{-9} × 1.0 × 10^6 = 0.02796V equ 3.626

Thus the output from the operational amplifier is 27.96mV

Another operational amplifier was used in the design to further amplified the 0.028V

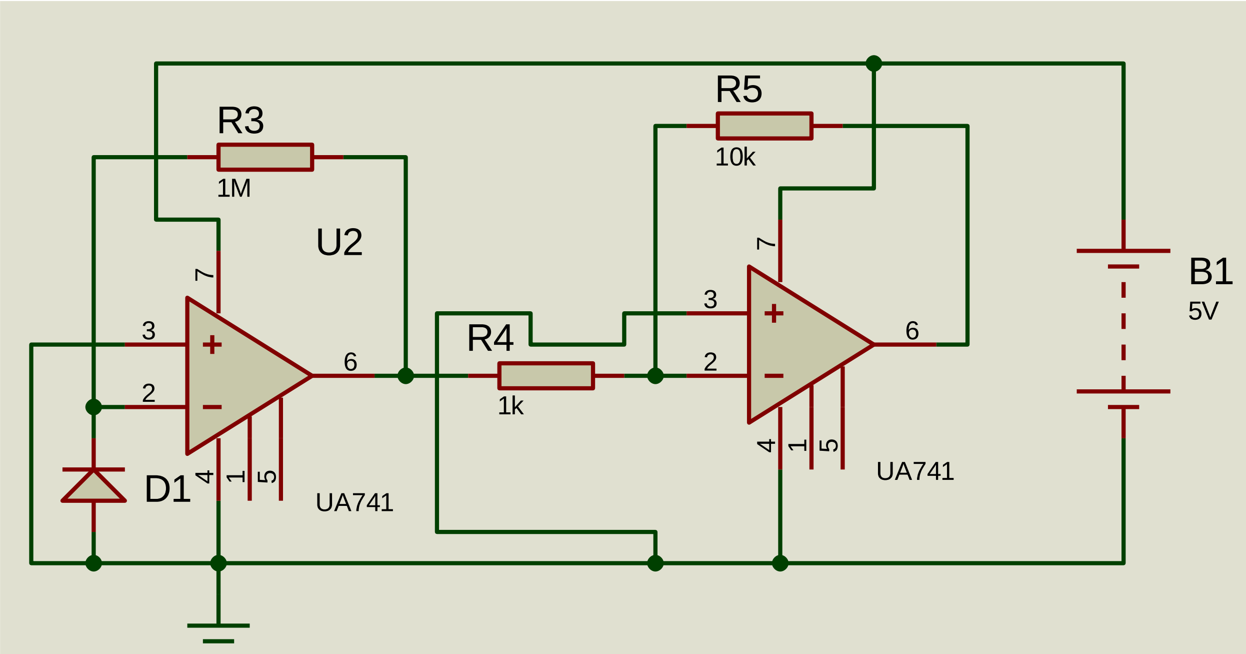

Fig 3.6d double inverted operational amplifier

The gain of the amplifier is $\frac{R_2}{R_1}$

Where $R_2 = 150K\Omega$ and $R_1 = 1K\Omega$

Therefore gain = $\frac{150K\Omega}{1K\Omega}$ = 150

Thus voltage output = $V_0 = V_{in} \times gain$
equ 3.627

$V_0 = 0.028 \times 150 =$ 4.2V

Therefore, the voltage output of the operational amplifier was 4.2V

This output voltage was used to control the commands of the micro controller

Sensitivity of the system

Gain 1 = $\frac{150K\Omega}{1K\Omega}$ = 150 equ 3.628

Gain 2 = $\frac{149K\Omega}{1K\Omega}$ = 149 equ 3.629

Gain 3 = $\frac{145K\Omega}{1K\Omega}$ = 145 equ 3.630

Gain 4 = $\frac{140K\Omega}{1K\Omega}$ = 140 EQU 3.631

Gain 5 = $\frac{139K\Omega}{1K\Omega}$ = 139

Voltage output 1 = gain $\times$ $voltage\ input$ = $150 \times 0.028 = 4.2V$
EQU 3.632

Voltage output 2 = gain $\times$ $voltage\ input$ = 149 $\times$ $0.028 =$ 4.172V
EQU 3.633

Voltage output 3 = gain $\times$ $voltage\ input$ = 145 $\times$ 0.028 = 4.06V
EQU 3.634

Voltage output 4 = gain $\times$ $voltage\ input$ = 140 $\times$ 0.028 = 3.92V
EQU 3.635

Voltage output 5 = gain $\times$ $voltage\ input$ = 139$\times$ 0.028 = 3.892V
EQU 3.637

Voltage output 6 = gain $\times$ $voltage\ input$ = 100$\times$ 0.028 = 2.8V EQU 3.638

Voltage output 7 = gain $\times$ $voltage\ input$ = 50$\times$ 0.028 = 1.4V EQU 3.639

Only voltage one and voltage two can be used to activate the command of the microcontroller, because it takes minimum voltage of 4V to activate the command in AT89C52 Microcontroller

3.7 **Flow Chat**

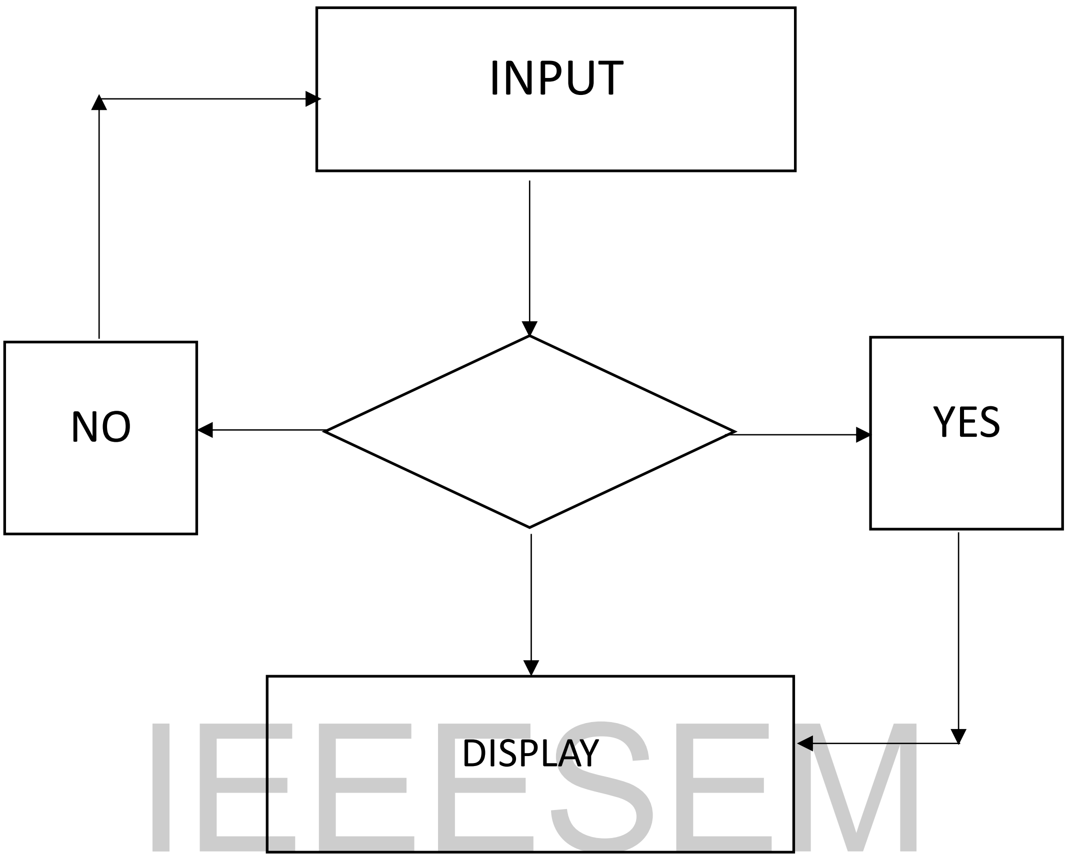

Fig 3.7a flow chat

4.0 TEST AND RESULT

Data taken to enable the input of the AT89C52

s/n	R1	R2	GAIN 1	INPUT	OUTPUT	MICRO CHIP INPUT ENABLE RESPONSE
1	1K	150K	150	0.028V	4.2V	POSITIVE
2	1K	149K	149	0.028V	4.172V	POSITIVE
3	1K	145K	145	0.028V	4.06V	POSITIVE
4	1K	140K	140	0.028V	3.92V	NEGATIVE
5	1K	139K	139	0.028V	3.892V	NEGATIVE
6	1K	100K	100	0.028V	2.8V	NEGATIVE
7	1K	50K	50	0,028V	1.4V	NEGATIVE

TABLE 4.1a

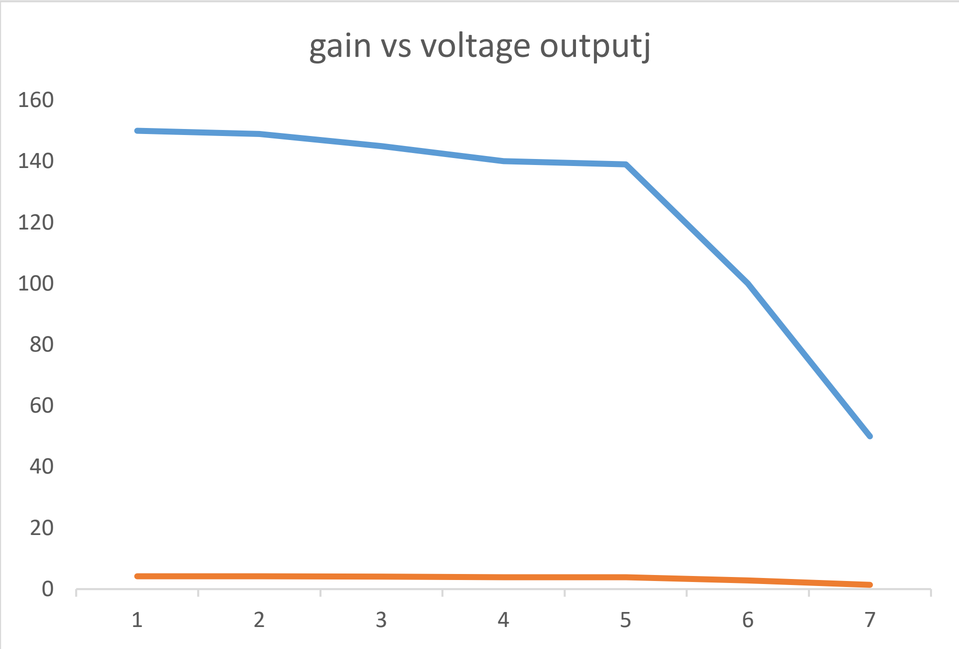

FIG 4.1a

4.11 Discussion

There are three microchip embedded in the system

The first microchip receives a command, at every impulse from the infrared system to detect the presence of an in and out of visitors, also time the visitor's acceptance, pending on the number of visitor that fluctuate the passage.

The second microchip receives a command to display all event that took place through the assistance of the first microchip on the liquid crystal display

The third microchip alter the command in the first microchip by changing the subroutine of the command when been interrupted by an external input.

From the graph one can experience that the increment of voltage due to the increase in the gain of the system, this was incorporated into the system because the microcontroller can only access input voltage within the range of 4V- 5V.

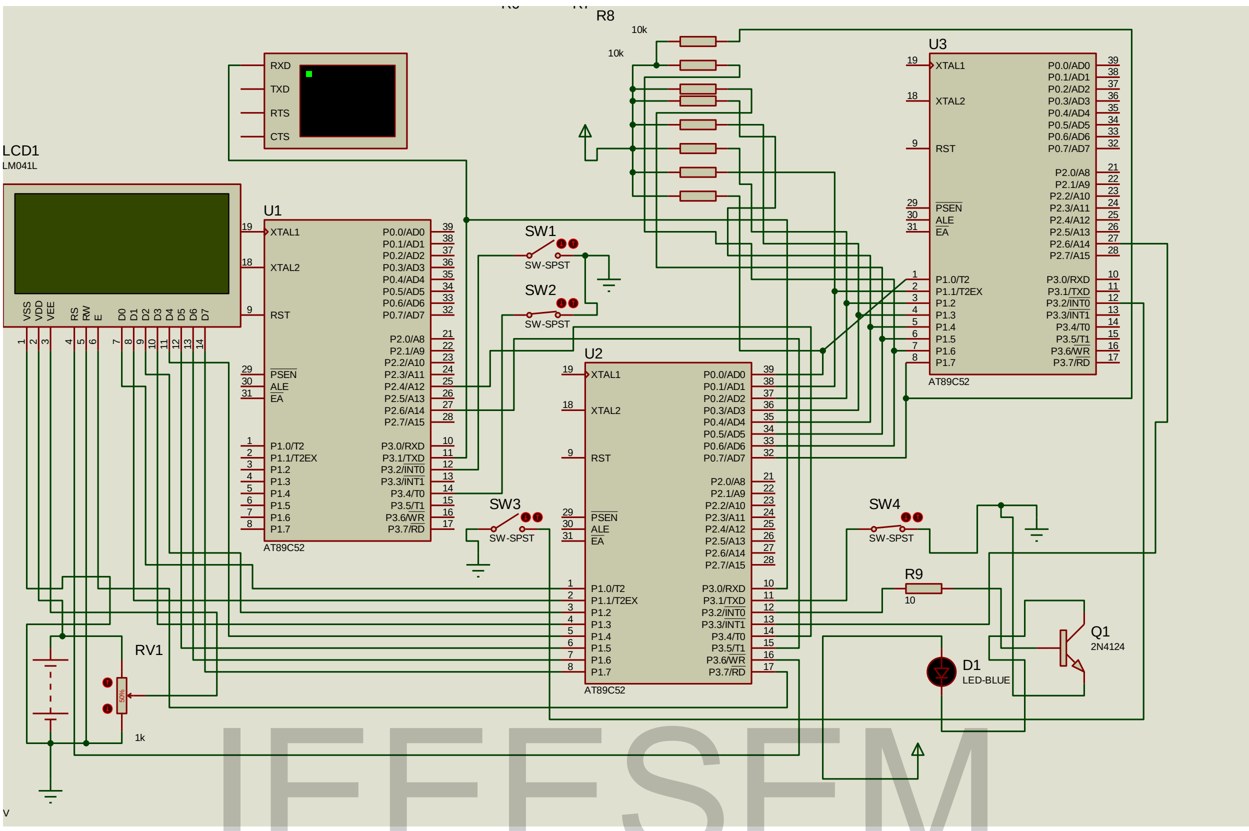

Fig 4.11a projected circuitry of the artificial intelligent of the office professional

5.0 Conclusion

We used infrared to access our information carrier which we used to fed the microcontroller, we were able to use this information carrier to access the commands and software protocol at every subroutine in the programmed, which gave us an expected output, the system was successful as speculated

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