International Journal on Recent Researches in Science, Engineering & Technology (IJRRSET)
A Journal Established in early 2000 as National journal and upgraded to International journal in 2013 and is in existence for the last 10 years. It is run by Retired Professors from NIT, Trichy. Journal Indexed in JIR, DIIF and SJIF.
Available online at: www.jrrset.com
ISSN (Print) : 2347-6729
ISSN (Online) : 2348-3105
JIR IF : 2.54
SJIF IF : 4.334
Cosmos: 5.395
Volume 5, Issue 8 - August 2017 - Pages 98-102

AIR CRAFT ANTI COLLISION SYSTEM USING ARDUINO

1.Manjula.G. Pai ,Dept of Electronics and Communication,Rural Engineering college Hulkoti,

paimanjula78@gmail.com

2.Geeta.Godi, Dept of Electronics and Communication,Rural Engineering college Hulkoti

geeta@gmail.com

3. Aleemsultana.Shaikh, , Dept of Electronics and Communication,Rural Engineering college Hulkoti

aleem.vlsi@gmail.com

ABSTRACT-. Recent incident in aircraft navigation in air and on ground, resulted in loss of lives of high profile citizens .so there is a need for anti collision system .Air traffic collision avoidance systems are based on using data supplied by external sources and internal sources, but the pilot has ultimate responsibility for air collision prevention. This project aims on the use of zigbee module which is connected to the Arduino uno board and the signal from the zigbee sends to the receiver if any aircraft is detected by the transmitter. Then the "aircraft is detected" message will displayed on the LCD screen ,buzzer will activated, by this pilot can take certain measurements when aircraft moves away from aircraft" normal mode" message will displayed on the LCD screen, buzzer sound turned off. All these conditions are reported to the ground station overIOT.

INDEX TERMS- AIR CRAFT ANTI COLLISION SYSTEM USING ARDUINO, Arduino UNO , IOT, LCD screen, Zigbee.

1.INTRODUCTION

The rapidly increasing density of air traffic has created a demand for instrumentation to reduce the possibility of air disasters due to collision. In the United states, incidence reported near-collisions is now estimated to be over 2000 per year , and represents a serious warning to the future growth of air navigation. Actual aircraft traffic data have been obtained by the Fedaral Avition Association from the RADAR system at the Atlanta Airport. This data has been

International Journal on Recent Researches in Science, Engineering & Technology (IJRRSET)
A Journal Established in early 2000 as National journal and upgraded to International journal in 2013 and is in existence for the last 10 years. It is run by Retired Professors from NIT, Trichy. Journal Indexed in JIR, DIIF and SJIF.
Available online at: www.jrrset.com
ISSN (Print) : 2347-6729
ISSN (Online) : 2348-3105
JIR IF : 2.54
SJIF IF : 4.334
Cosmos: 5.395
Volume 5, Issue 8 - August 2017 - Pages 98-102

analyzed to determine encounter statistics which would result with various form of warning criteria. Probabilities of encounter, encounter rates, and average encounter durations are determined for various definitions of the encounter. Collision avoidance is emerging as a key issue for UAS access to civil airspace.Numerous technologies are being explored in the community, including research sponsored by the Space Administration and National Aeronautics, the United States Air Force.The Embedded systems could not possibly have appeared before 1971 .In 1971 Intel introduced the world's first microprocessor

2.METHODOLOGY

In this project, we are using Arduino UNO, LCD, Zigbee, Led array, Buzzer. In this project, we can identify the aircraft1(receiver) coming towards the other aircraft2(transmitter). By this the pilot can take certain measurements .There is a Zigbee which is used for the communication between two aircrafts. This Zigbee is connected to the microcontroller. Whenever the aircraft1 is approaching aircraft 2 then a signal will be sent to the microcontroller and a buzzer will be activated, led array is in on condition and “aircraft detected and sending data” message will be displayed on the LCD screen of Aircraft1(receiver) When ever both the aircrafts are out of range then LCD displays as “NORMAL” and buzzer goes turn Off.

3. CIRCUIT DIAGRAM

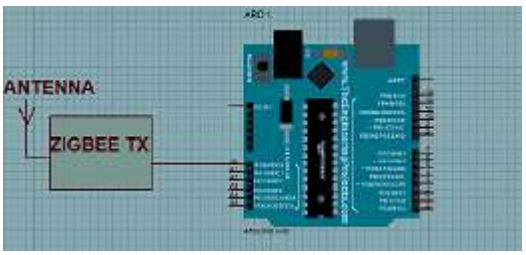


Fig 1:Transmitter circuit

International Journal on Recent Researches in Science, Engineering & Technology (IJRRSET)
A Journal Established in early 2000 as National journal and upgraded to International journal in 2013 and is in existence for the last 10 years. It is run by Retired Professors from NIT, Trichy. Journal Indexed in JIR, DIIF and SJIF.
Available online at: www.jrrset.com
ISSN (Print) : 2347-6729
ISSN (Online) : 2348-3105
JIR IF : 2.54
SJIF IF : 4.334
Cosmos: 5.395
Volume 5, Issue 8 - August 2017 - Pages 98-102

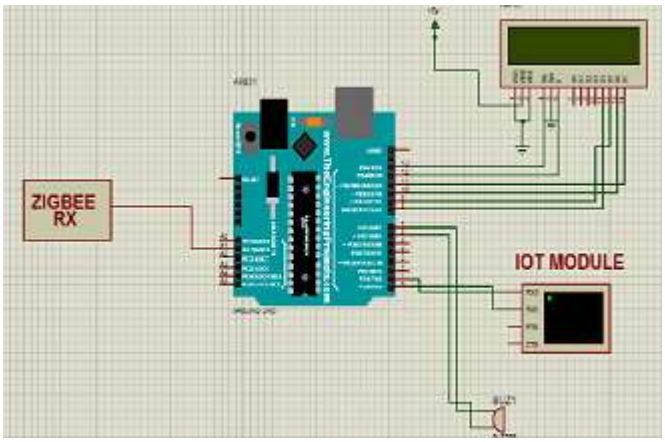


Fig 2:Receiver circuit

4.BLOCK DIAGRAM

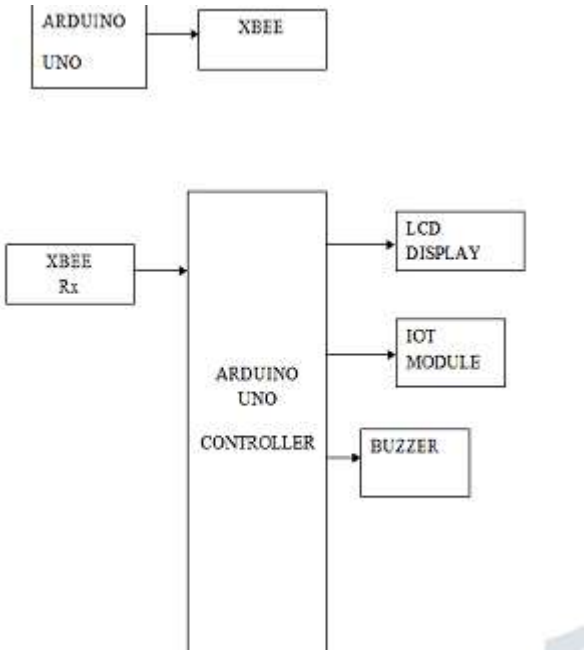


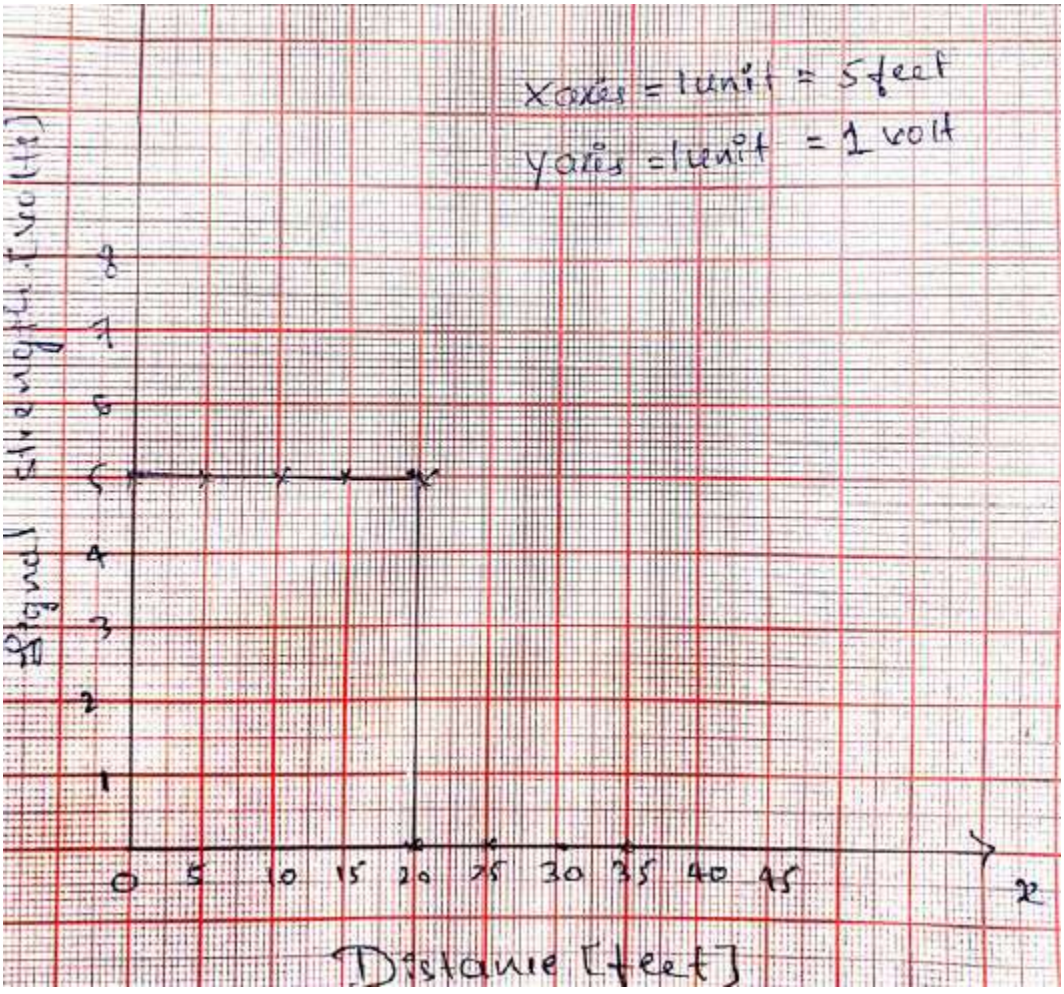
Fig 3. Block Diagram

International Journal on Recent Researches in Science, Engineering & Technology (IJRRSET)
A Journal Established in early 2000 as National journal and upgraded to International journal in 2013 and is in existence for the last 10 years. It is run by Retired Professors from NIT, Trichy. Journal Indexed in JIR, DIIF and SJIF.
Available online at: www.jrrset.com
ISSN (Print) : 2347-6729
ISSN (Online) : 2348-3105
JIR IF : 2.54
SJIF IF : 4.334
Cosmos: 5.395
Volume 5, Issue 8 - August 2017 - Pages 98-102

5.WORKING PRINCIPLE

- To detect the objects that are far away with accuracy.
- To remove any potential threats that the object has to offer by knowing the nature of it in advance
- Here we are using arduino uno as a controller which controls all the operations.
- If in between aircraft any collision occurs then send data using zigebee.
- Iot module used to update collision related data on web server
- Whenever collision get occurs buzzer will beep automatically

6.PROJECT OUTCOME



International Journal on Recent Researches in Science, Engineering & Technology (IJRRSET)
A Journal Established in early 2000 as National journal and upgraded to International journal in 2013 and is in existence for the last 10 years. It is run by Retired Professors from NIT, Trichy. Journal Indexed in JIR, DIIF and SJIF.
Available online at: www.jrrset.com
ISSN (Print) : 2347-6729
ISSN (Online) : 2348-3105
JIR IF : 2.54
SJIF IF : 4.334
Cosmos: 5.395
Volume 5, Issue 8 - August 2017 - Pages 98-102

Distance versus Signal strength Graph has been plotted.signal strength is constant (5volts).As the distance varies the buzzer sound also varies .buzzer sound is activated before 20feet,after the 20feet buzzer sound will turned off.

CONCLUSION

The project "Advanced Aircraft anti-collision system and reporting to ground station over internet of thing (IoT)" has been successfully designed and tested. Integrating features of all the hardware components used have developed it. Presence of every module has been reasoned out and placed carefully thus contributing to the best working of the unit. Secondly ,using highly advanced IC's ,using of zigbee instead of heavy radar system reduce the complexity and with the help of growing technology the project has been successfully implemented.

REFERENCES

[1].IEEE Std 802.15.4 2003
[2]. Research Paper –IJERSS
[3].Sugano, Masashi, et al. "Indoor localization system using RSSI measurement of wireless sensor network based on Zigbee standard." Target 538