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Title: **TIME CRITICAL APPROACH TO AVOID AIR TRAFFIC CONTROL BASED ON**

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## TIME CRITICAL APPROACH TO AVOID AIR TRAFFIC CONTROL BASED ON

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**Abstract:** Avoid accident related to airplanes based on the Embedded Electronics Systems (EES) display and installed in the compartment provided for the pilots. It will give the optimum information to the pilots and can easily control the airplanes to land safely. The main reason for airplanes accident because of bad weather condition, fault in present information and because of the speed of the airplanes. Mainly accidents occur due to the obstacle like birds. With the help of the EES display we can avoid the accidents and information will be displayed. Through the Microcontrollers will get the information from the sensor sources and it will give the airplanes landing related information to the pilot through the compartment provided for the pilot display. Radio Frequency (RF) signal used to find the airplanes longitude and altitude will be identified and displayed the airplanes movement. Embedded Electronics Systems (EES) display will show the accurate distance information from one end to the end present information and status of that present information will be known. If we implement this system in the compartment provided for the pilot to see the displayed information, pilot can safely land the airplanes at any environmental situations.

**KEY WORDS:** Mobile sink, cluster head, Internet of things (IOT), Wireless Sensor (WSN), Base Station.

### I. INTRODUCTION

Airplanes will usually travel from one airport to the airport at the current situations, if the visibility level is below the acceptable limit or when the pilots cannot see the present information. At the lower visibility level, increases the workload to the pilot, he may scan several instruments and he will create a mental picture of the airplanes situations. His

mental imagination picture accuracy will not mismatch to the touch point should not exceed the meter level. Airplanes landing related problems are most hazardous portions of the flight. Most of the airplanes accident occurs due to the landing problems approximately 50 percentage of accidents will occur due to the lack of airplanes landing information

problem. To avoid these airplanes accident related problems by the aviation industry, these industry will rapidly working for the increasing the faster information, comfortable zone and safer transportation in the airplanes. Federal Aviation Authority announce the zero accident policy, it will give the require airplanes navigation from take-off to the landing. There are still drawbacks in the airplanes because due to lack of

## II. RELATED WORK

A clustering method for wireless sensor networks with heterogeneous node type [1]. Detection of selective forwarding attacks in wireless sensor network [2]. Environmental monitoring using sensor based wireless embedded system and ANN [3]. clustering methods for cluster-based routing protocols in wireless sensor network [4].

## III. METHODOLOGY

Wireless sensor network (WSN) is a low-powered network formed by the sensor nodes that finds application in civilian, military, visual sense models and many others. Improved network lifetime is an important task to be achieved by these sensor networks. The conservative routing protocols cannot be applied here due to its battery powered nodes. To provision energy efficiency, nodes are frequently clustered in to non-overlapping clusters. Proposed project gives a brief overview on clustering process in wireless sensor network.

technology to overcome we have to implemented in these paper. The main limitations in the current airplanes equipments limitations are: inaccuracy, vulnerability to multipath, unreliability, obstruction in signal broadcasting, lack of integrity, very high cost and cause of ground service cognition. In this paper we are trying to avoid accident related parameters and the obstacle like bird in the airplanes.

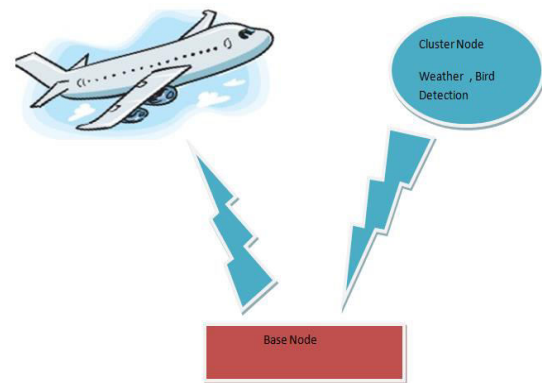


Figure1. Proposed System

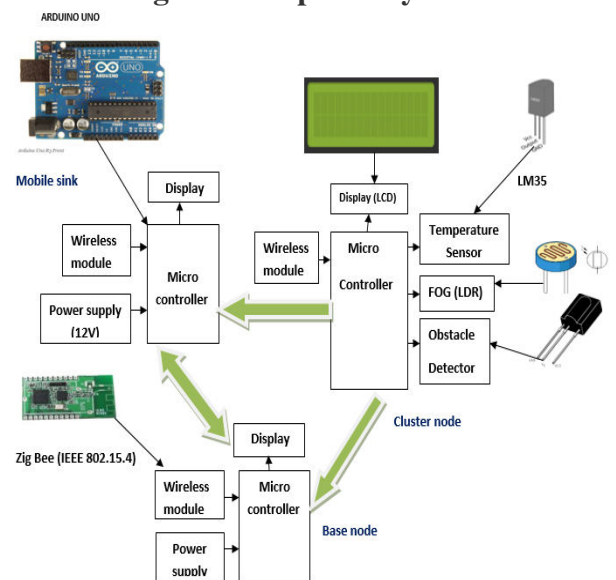


Figure2. Block diagram

diagram

In Cluster Node LDR is used to detect fog, LM35 Sensor is used to detect

temperature .IR Sensor is used to detect objects (like birds). It requires 5v power supply. Microcontroller (ARDUINO UNO ATmega328) is used to process the instruction. LCD (16x2) is used to display the output. Wireless module (Zig Bee) is used to communicate with other nodes. Data may be ring topology, star topology and mesh topology. But we are using Ring topology in our project. Cluster head will collect the data in the form of ring topology through cluster head data will send to the mobile sink(aircraft) and also the base node.

#### IV. ALGORITHM

As every process needs sequential steps, the controlling of the proposed system is explained in the following steps. The inter communication between hardware components is explained.

**Step1:** Start

**Step2:** input object, fog and temperature.

**Step3:** check the condition

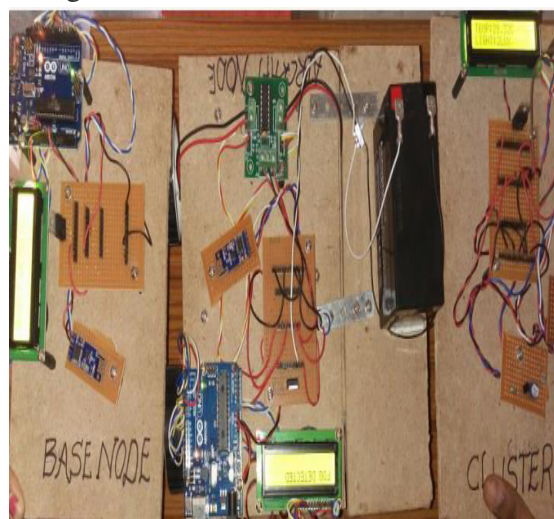
- I. If fog is present, it will display message (**i.e. fog is detected**) in Cluster node. With the help of ZigBee, message is send and display in the Aircraft node (Mobile Sink).
- II. If temperature is more than 30°C present, it will display temperature value in cluster node. With the help of ZigBee message (**i.e. Temp is more**) is send and display in the Aircraft node (Mobile Sink).
- III. If obstacle (**birds**) is present, it will display message (**i.e. object is detected**) in Cluster node. With the help of ZigBee,

message is send and display in the Base node. Through Base node message is send to the Aircraft node (Mobile sink) and it will give instruction to change its direction in the Aircraft node (Mobile sink) and display the message (i.e. object is detected) in Aircraft node.

**Step4:** Stop

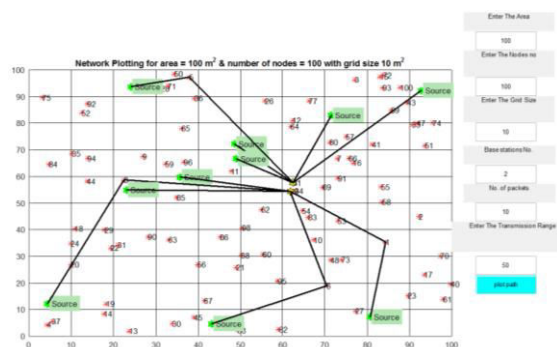
#### V. RESULTS

In the cluster node, object is detected using IR Sensor and information will be send through Zig Bee model in order to communicate with the other nodes and displayed in LCD. In base node information will be collected through Zig Bee and displayed in the LCD. And send the information to the mobile sink to change its direction.



**Figure3. Over all model**

The mobile sink is developed using Arduino Uno model, which is connected to cloud through Zig Bee module and collects the information and changes its direction and displayed in the LCD as "Object is detected".



**Figure 4. Simulation of destination path identification**

Simulation for determining the shortest path between the source and destination is computed using MATLAB Code. The distance and orientation between nodes are pre-defined. The number of nodes can be varied, as it is user defined. Initially source and destination nodes are fed as inputs, accordingly the shortest path between the nodes is obtained as output.

## VI. CONCLUSION

Our proposed project avoiding the accident related to aircraft landing. Our project also demonstrates more efficient method for air traffic control [ATC], when compare to traditional techniques. The main target of our point is eco-friendly specially related to savings of birds. Repudiating the mishap related to fighter. Animate the pneuma of passengers and also the birds from the harm /dangerous. WSN is an emerging paradigm of computing and networking where a node may be self-powered, and have sensing, computing & communication capacities. For that reason, we can easily identify is there any issues related to aircraft. Detection of birds in the cluster node. Transmitting cluster node data to base node. Transmitting base node data to airplane node. Detection of fog. Measuring temperature in cluster node.

Our proposed project avoiding the accident related to aircraft landing. Hence, aims to reduce the Vulnerability. With the effective integration of hardware & software, a powerful & secured system can be developed. Our project also demonstrates more efficient method for air traffic control [ATC], when compare to traditional techniques. This system is a novel idea for avoiding accidents & air traffic control (ATC) when an aircraft is landing. And also escape from vulnerability.

## VII. REFERENCE

- [1] R. Devika, B. Santhi and T. Sivasubramanian, 'Survey on routing protocol in wireless sensor network', *International Journal of Engineering and Technology*, vol. 5, no. 1, pp. 350–356, 2013.
- [2] M. Y. Ameer Ahmed Abbasi, 'A survey on clustering algorithms for wireless sensor networks', *Computer Communications*, pp. 2826–2841, 2007.
- [3] G. J. Potties and W. J. Kaiser, *Wireless Integrated Network Sensors*, *Communications of the ACM*, vol. 43, no. 5, pp. 51-58, May 2000.
- [4] Environmental Wireless Sensor Networks, Vol. 98, No. 11, November 2010 | Proceedings of the IEEE.
- [5] A Survey on Environmental Monitoring Systems using Wireless Sensor Networks, *JOURNAL OF NETWORKS*, VOL. 10, NO. 11, NOVEMBER 2015.
- [6] **Jyothi A.P, Usha Saktivel,** "CFCLP- A Novel clustering Framework based on

combinatorial Approach and Linear Programming in wireless Sensor Network” IEEE Xplore digital library, ISBN:978-1-5090-6221-8/17/\$31.00©2017 IEEE

[7] **J. Collins.** The challenges facing U.S. navy air craft electrical wiring system[C]//Proceedings of the 9<sup>th</sup> Annual Aging Aircraft conference, 2006.

[8] **Jyothi A.P, Usha Saktivel,**” MSOC: Multi scale optimized clustering for energy preservation in wireless sensor network. Wireless personal communication <https://doi.org/10.1007/s11277-019-06146-y> Springer US print ISSN: 0929-6212, Online ISSN: 1572-834X.

[9] Santar pal Singh, S.C. Sharma, “A Survey on cluster based routing protocols in wireless sensor network”, International Conference on Advanced Computing Technologies and Application (ICACTA-2015).

[10] Runway Length Requirements for Airport design, ”FAA Advisory Circular ,150/5325-4B July 1, 2005.

[11] **J.Collins.** The challenges facing U.S.navy air craft electrical wiring system[C]//Proceedings of the 9<sup>th</sup> Annual Aging Aircraft conference, 2006.

[12] **K.Kiefer.** Real–world experience in wireless instrumentation and control systems[C]//Proceedings of the CANEUS”FLY-workshop, 2007.

[13] **Jyothi A.P , Usha Saktivel,**”Energy Optimization in Sensor Network using Fuzzy Local Approximation Membership Algorithm”,ISS N.vol.10,2015.