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AUTO PILOT LANDING SYSTEM FOR HELICOPTER

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Abstract— The cause of invention deals with landing of aircrafts particularly in adverse weather condition or during limited visibility .To overcome this drawback a system which enables for safety landing is necessary .The proposed system is the possible solution to this problem . This system provides safety landing in fog condition and judgment in hilly areas.

Keywords— **Ultrasound sensors, ADC, DAC, Microcontroller, Stepper Motor**

I. INTRODUCTION

The proposed system is based on microcontroller which enables for safe landing of helicopter in adverse condition and limited visibility. Aircraft particularly helicopters are very difficult to operate during landing, when the pilot is unable to observe adequately the motion of helicopter with respect to landing area. Eg. :- As a helicopter approaches a landing site in desert, downwash from the rotor typically strips up the sand ,which greatly reduces visibility . This is very dangerous because the pilot cannot adequately observe the landing area to obtain the necessary visual feedback of helicopter speed and position. This system enables safer landing during degraded environment such as brownout whiteout ,night operations and the like. Microcontroller system using different sensors is used for this purpose. It is an object of this system to land safely during reduced visibility conditions.



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II. PROPOSED PROCESS

.Aircraft particularly helicopters are very difficult to operate during landing, when the pilot is unable to observe adequately the motion of helicopter with respect to landing area .

The proposed system is based on microcontroller like 8051/Arm 7/89C52 controller connected to sensors through ADC and DAC converter which carries signals to mechanical control unit for controlling like cyclic or collective in helicopter during landing which enables safe landing of helicopter in adverse conditions and limited visibility. In this process ultrasound waves or ultrasonic transmitter are used and signal are received by ultrasonic receiver . This system enables safer landing during degraded environment such as brownout, whiteout, night operations and the like . Microcontroller system using different sensors is used for this purpose. Frequency of all the four sensors will be different so that the receiver should not receive the signal from another transmitter . Hardware model of neural network can also be applied instead of microcontroller. This system enables pilot to land safely during reduced visibility conditions.

In one of the preferred embodiment of present invention ultrasonic radar system is used for the detection of altitude. Apart from that we can used laser light technology an RF waves for measurement of altitude. In normal conditions when pilot start autopilot mode the autopilot landing system start's, at that time firstly the altitude will be detected . After that when the output of four sensors will be same it will go to controller and the helicopter will come down until predefined time and then the helicopter will get stabled for few seconds on that altitude and then again the altitude will be detected by the sensors and again output will get same the helicopter will come down for a predefined timing and when the output of sensors will be zero(finite value of sensor from ground in stop condition) the engine will halt.

Now , when the output of one or two sensors will be different at that time the helicopter will move aside or in forward direction as per the programming of microcontroller.

This system enables safer landing during degraded environment such as brownout , whiteout , night operations and the like . This system helps pilot to land safely during reduced visibility conditions.



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III. PROPOSED POSITION FOR SENSOR



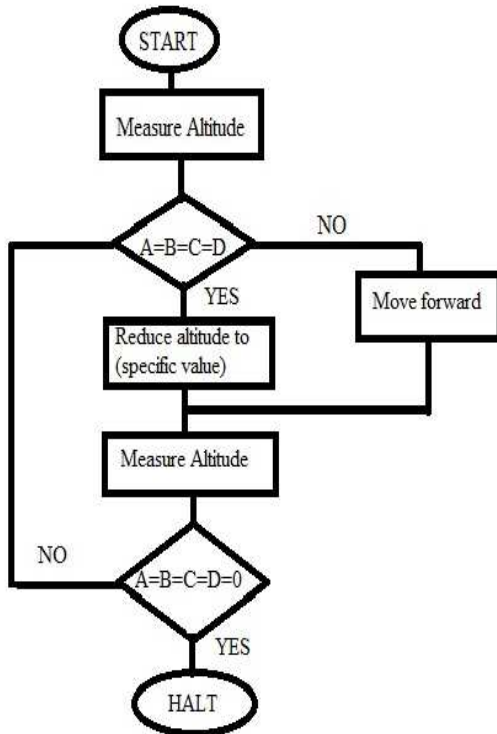
Diagram 1 and diagram 2 shows position of the sensor A,B,C,D

IV. SYSTEM FLOWCHART



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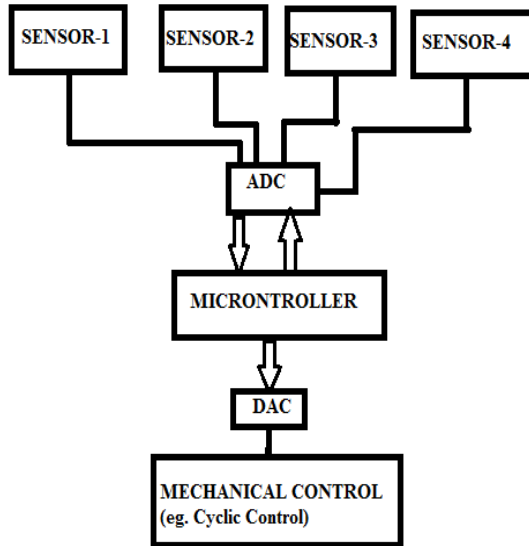


V. SYSTEM BLOCK DIAGRAM



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VI. CONCLUSION

- Safe landing in reduce visibility condition.
- Safe flight in hilly area.
- Blind landing using suggested autopilot process.

VII. REFERENCES

- [1] IPO patent 2011 /MUM/2011