Abstract: This Paper Is A Arrangement Of The Outline Procedure And Comprehension Of The Airphibian Surveillance Robot. A Prototype Of Flying Machine Based On Four Rotors Design. The Airphibian Robot Can Be Controlled By The Transmitter And Receiver Also Operated By An Arduino Microcontroller. We Want To Achieve Implementation Of An Arduino Microcontroller As The Airphibian Surveillance Robot’s Flying Machine Controller. Keywords – Radio Transmitter And Reciever, Arduino IDE, BLDC Motor

I. INTRODUCTION


The Progress In Technology Over The Past Years, However, It Is Achievable To Distantly Remote Areas Of Significance By Using Robots In Site Of Humans. Independently From The Clear Benefit Of Not Having To Possibility Of Harm In Any Human Resources, Earthly And Flying Robots Can Also Collect Details That Are Not Obvious To Humans. By Collecting Them With High Resolution Cameras And Various Sensors, It Is Possible To Collect Details About The Certain Remote Area. Thus, In Recent Times, Surveillance Robotics Has Become An Area Of Great Research Interest. However, Producing A Small Robot For Testing And Research Purposes Proves To Be Highly Expensive. Particularly Because A Security Robot Would Require Certain Components Such As A GPS Module, High Resolution Cameras, Radios For Satellite Connectivity[2].

II. DETERMINING AIRPHIBIANS ORIENTATION:

Airphibian Is A World’s First Flying Car, Less A Flying Car Than Driving Airplane, The “Airphibian” Was A Plane/Auto Hybrid Crafted And Developed By Robert Fulton. In 1950, It Became The First “Road Albe Aircraft” To Be Certified By The FAA. Robert Fulton’s First Flying Car, Which He Named The “Airphibian”, It Is Used The Same Controls For Flying And Driving.

In Sequence To Maintain Stability Of The Airphibian It Is First Critical To Regulate The Aircraft Orientation (Known As Attitude) Relative To Fixed Inertial Frame Of The Earth. These Inertial Frame Is Shown In Figure 1. And Made Up Of Orthogonal Axes (East, North And Down) And The Rotation About These Axes (Roll, Pitch And Yaw). In Order To Gain Stable Flight We Need To Control The Stability Of The Roll And Pitch Axes. If These Axes Are Appropriately Controlled, The Airphibian Will Instantly Tip Over And Not Able To Fly. The Pitch And Roll Attitude’s Of Aircraft Are Determined Using The Attitude Sensor. In The Instance Of Our Project These Was Done Using The Gyroscope And Accelerometer In Combination. The Yaw Axes Must Also Be Relatively Stable For The Airphibian To Be Controlled, But It Is Less Crucial. Tiny Accumulation In The Yaw Axes Is Easily Counter-Work Using The Radio Control, And Usually Will Not Conclude In A Loss Of Stability. Using Only An Accelerometer And Gyroscope, The Absolute Yaw Orientation Is In Fact Not Measurable. The Change In Yaw Orientation Is Measurable By Using The Gyroscope, But These Proved To Be Adequate To Enable Of The Airphibian.
III. Airphibian Surveillance Robot Essentials


- Speed Controllers
- Airphibians Frame
- Motors And Propellers
- Radio Receiver
- Flight Controller
- Attitude Sensor

IV. Block Diagram

Figure 2. Block Diagram Of Surveillance Robot

V. Working Principle

The Purpose Of This Project Is In Two Modes Rc Modes And Quad Copter Mode, Quad Copter Mode Uses Bldc Motor. Quad Copter Is Based On Newton’s Third Law And Bernoulli’s Law. According To Newton’s Third Law The Mass Of Air Is Pushed Down Which Lift By Using Rotor’s. Whereas Bernoulli’s State That Pressure Difference Between The Air At The And At Bottom Due To Condo Effect Generate A Lift Towards The Lower Pressure At The Top.

The Rotation Speed Must Be Same And Sufficient Enough For The Quad Copter To Generate A Lift To Move Quad Copter In Left Side. The Thrust Force Acting On Left Side Should Be Minimize So That Drag Will Increase And Move Towards Left. Similarly To Move Quad Copter In Right Side The Thrust Force Acting On Right Side Should Be Minimize So That Drag Will Increase And Move Towards Right. Also To Move Quad Copter In Forward And Backward Direction Thrust Force Of Forward And Backward Rotor Should Decrease.

VI. Applications

- Commercial And Industrial Application.
- Traffic Monitoring And Management.
- Search And Rescue Operation.
- Temperature And Altitude Estimation.
• Crowd Management.
• Locating Forest Fire Or Frost Conditions In Farmlands.
• Weather Forecasting.
• Post Natural Disaster.
• Object Identification

VII. ADVANTAGES:

• The Main Benefit Of The Proposed System Is To Capture Live Video Streaming And Capture Perfect Image.
• The Proposed System Is Easy To Carry From One Place To Another Place Due To Its Light Weight.
• It Is Efficient, Reliable And Compact.

VIII. FUTURE SCOPE:

The Proposed System Can Be Used By A Ordinary Person For The Security Purpose In Domestic Areas. Also With More Advanced Technology It Can Be Used For Personal Transport. Nowadays A World Full Of New Technology These Aircraft Can Be Used For Entertainment Purpose. These Aircraft Product Can Be Use In Fire Extinguisher Without Harming Living Things Nearby.

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IX. CONCLUSION


REFERENCES

Journal Papers: