IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 15, May 2023

RC Flying Bird – Drone Application

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Abstract*: The objective for this project is to design and implement an flying capable of short distance flight. It is a robot that flies in a manner similar to a bird by generating flapping wing motion. Flying bird (Drone) can be more efficient, cost effective and environmentally friendly in comparison to fixed-wing aircrafts. This flying has been developed by observation of both natural and man-made fliers, as well as previous academic projects. Goals for this project include being capable of maneuvering around and over obstacles by adjusting pitch, yaw, and roll, able to glide for five seconds under its own power, skillful at alternating between flapping and gliding with minimal disruption of flight pattern and being durable enough to withstand impacts with minimal to no damage.*

Keywords: Component, Formatting, Style, Styling, Insert

I. INTRODUCTION

RC Flying Birds are machines designed to fly by flapping their wings. RC Flying Birds are essentially designed to mimic bird flight. RC flying birds use flapping and hydrofoil wings to gain enough lift to support their own weight. In this process, the air is deflected downward creating a pressure differential. Flapping should be combined with forward speed to provide lift for the RC Flying Bird to fly. Unlike traditional aircraft such as airliners that use turbines and fans to generate thrust, the RC Flying Bird uses flapping wings as its thrust source. Both commercial jets and RC flying birds, on the other hand, use wing shape and angle of attack to generate lift and maintain flight. Flapping wing designs offer many advantages over traditional fixed-wing and rotary aircraft, including increased improvements in the aerospace market. Some of the advances include military, research and commercial industry products, and may extend to new ideal solutions for air travel. TheRC Asuka described in this documentwas developed based on previous research conducted by Popovic

Labs in Worcester. Natural flying objects such as birds and insects have fascinated human inventors throughout history. The ease and grace of takeoff is far beyond the state of the art for aircraft and their control systems. That's not to say modern aircraft designs are ineffective, they are better in many ways. Propellers and turbines are very efficient ways to generate thrust, airfoils efficiently generate lift

The Boeing 747 achieves a dimensionless transportation cost (energy consumption divided by weight times distance) of 0.1, which is on par with a high-flying albatross [14], and is surprisingly reliable. The manoeuvrability of the albatross is in no way matched. This problem is a good reflection of locomotion with legs and wheels. Wheels offer a stable, easy-to-analyze, and highly efficient mode of locomotion at the cost of a lot of agility. Legs are notoriously difficult to control, current implementations are energy inefficient [2], and flapping flight is comparable. The unsteady fluid dynamics of a flapping wing are poorly understood, making RC Flying Bird (henceforth the term for flapping-wing vehicles) difficult to manipulate. Interest in ornit design and control has increased in recent years due to growing interest in the field of very small air vehicles (MAVs). These small flying machines have captured the imagination of many as ideal platforms for a variety of tasks, including system surveillance and surveillance. [6]. This paper covers two years of of 1.8 meters that took off shortly after a feasibility study was conducted in the laboratory. From that point on, two Phoenix hardware revisions were made, one in the summer of 2007 and one in the summer of 2008. Flight tests and analyzes were conducted during these summers. In August 2008, we finally succeeded in level flight by computer control. work on the Phoenix RC Flying Bird Project.

DOI: 10.48175/IJARSCT-10934

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II. RELATED WORK

The Sanskrit epic Ramayana (4th century BC) describes the RC Flying Bird (drone application), Pushpaka Vimana. The ancient Greek legend of Daedalus (Greek demigod engineer) and Icarus (son of Daedalus) and the Book of Han (19 AD) both describe the use of feathers to create human wings, but these It's not actually an airplane. Some of the early manned flight attempts were intended to achieve flapping flight, but may have actually achieved only gliding flight. These include the flights of the 11th-century Malmesbury monk Aylmer (recorded in the 12th century) and his 9th-century poet Abbas ibn Phimas (recorded in the 17th century). Roger Bacon, writing in 1260, was also one of the first to think of a technical means of flight. In 1485, Leonardo da Vinci began studying bird flight. He realized that humans were too heavy and not strong enough to fly simply by attaching wings to their arms. So he designed a device where the flyer was placed on a board and using hand levers, foot pedals and a pulley system he moved two large skinned wings. Some of the early manned flight attempts may have been intended to achieve flapping flight, but may have achieved only gliding flight. These include the flights of the 11th-century Malmesbury monk Aylmer (recorded in the 12th century) and his 9th-century poet Abbas ibn Phimas (recorded in the 17th century). Roger Bacon, writing in 1260, was also one of the first to think of a technical means of flight. In 1485, Leonardo da Vinci began studying bird flight. He realized that humans were too heavy and not strong enough to fly with just wings on his arms. So he designed a device where the flyer rests on a board and using hand levers, foot pedals and a pulley system he moves two large skinned wings.

Over the past 25 years there has been an increase in interest, development and research in the field of very small air vehicles (MAVs) [2]. During this time, the number of ornithopters increased

III. MATERIALS AND METHODS

Table 1: Technical specifications

Component Name	**Specifications**
Brushless DC Motors(out runners)	1000KV
Flight Controller	-
Transmitter and Receiver	2.4GHz
Electronic Speed Controllers (ESC)	20 Amp
Propellers	1045R,1045 Diameter: 10 inch Pitch: 4.5 inch
3s Li-Po Battery	11.1(nominal) 12.6V(max) 2200 mAh 30C

Part Description	**Avg. Weight (gms)**	**Quantity**	**Final Avg. Weight (gms)**
Flight Controller	23	1	23
Propellers	7.5	4	30
Receiver	7	1	7
Motors	30	4	120
ESC	11	4	44
Battery	180	1	180

Table 2: Average weight calculation of a drone system

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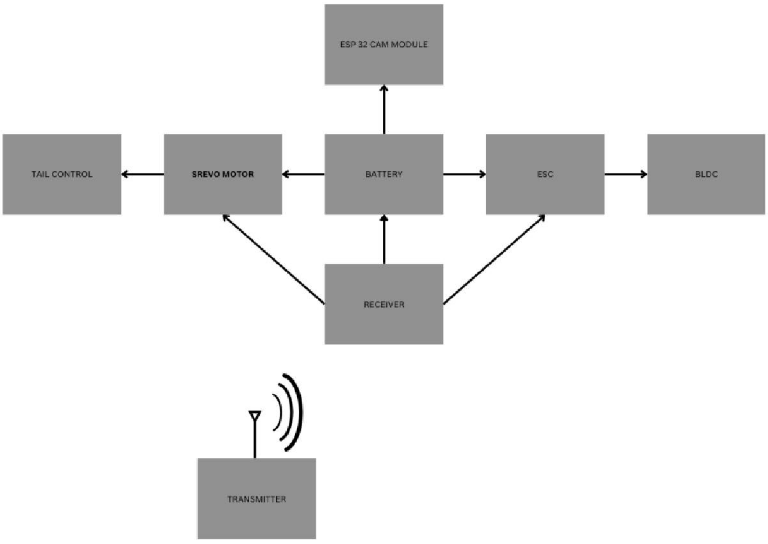
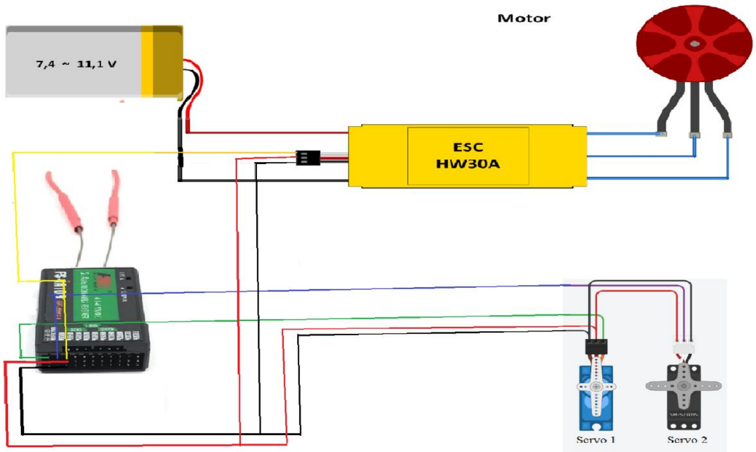
Block Diagram



Circuit Diagram



Flow Chart

Step 1: Start
Step 2: Initialize the Module.
Step 3: Get Data from Transmitter.
Step 4: Controller Receive Command from Transmitter.
Step 5: Signal send to esc.
Step 6: Signal Send to Servo.
Step 7: ESC's Vary Motor speed according signal.
Step8: Servo change The Direction of Prototype

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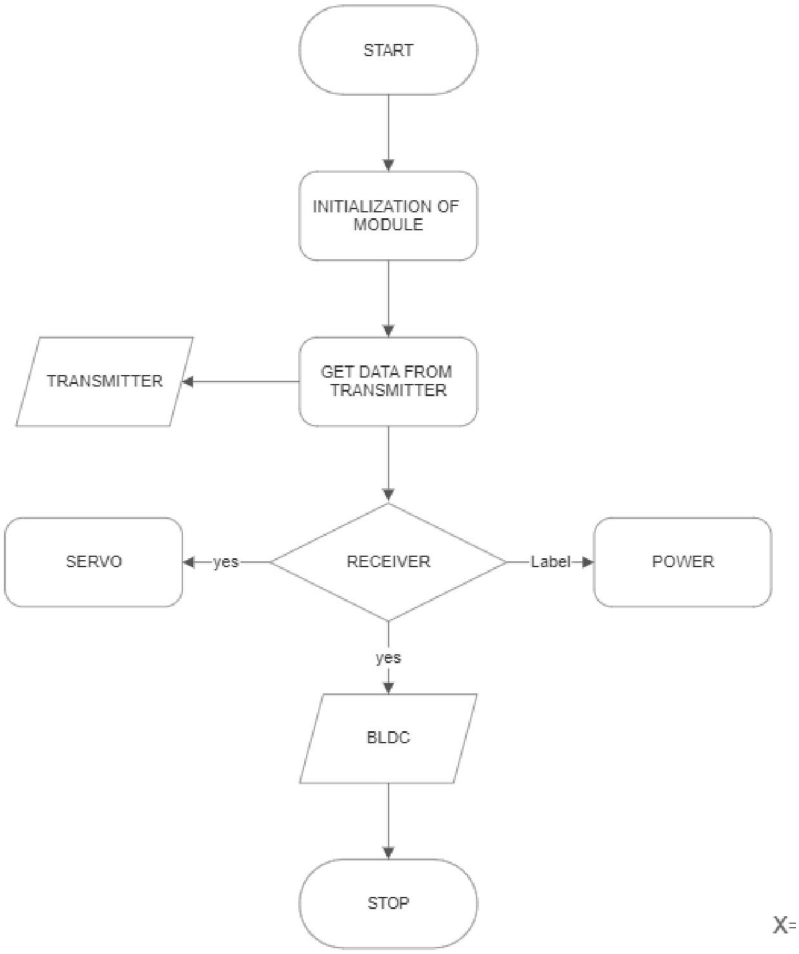

IV. WORKING

Key element of the project is controller for controlling the prototype Transmitter will transmit the signal towards the ,receiver will catch the signal and will send to the controller then controller will detect thee signal and send it to the motor depending upon the operation to be performed i.e. if operator wants to fly the prototype it will send signal to motor 1 . operator wants to change the direction it will send signal to motor2 simultaneously camera will be capturing the video.

V. CONCLUSION AND FUTURE WORK

In this project, we created a prototype of the unmanned ornithopter that looks like our local bird.

- This helps us monitor other countries and terrorist organizations to improve our defense system.
- Bird manipulation resembles the flight of birds common in nature, and no one can imagine being spied on.
- Under these circumstances, we, Engineer, can help our nation by creating this kind of robot which is very useful in supporting our defense.

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