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Hover Surf Drone

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Abstract: ***The technological growth leads to various advanced inventions in the world, which makes the work ease. In this rush-up generation, we must adopt to an ease and the faster way to reach our destination on time without any troubles. Hence flying is the only way of faster transportation without any interference. However airplanes, Jets, helicopters etc helps us; Hover surf is a drone type flying model which flies over the sky with shorter distance from the land surface. Even it acts as an autonomous vehicle which can be operated or travelled by a person. Hover surf works under the principle of a flying drone.***

Index Terms: ***Quad-copter, UAV, UAS, Binding technology, Avionics***

I. INTRODUCTION

The maturing and miniaturization of an applicable technologies in the 1980's and 1990's interests in UAV (Unmanned Aerial Vehicle) which was the main working mechanism of Hover Surf Done. UAV's demonstrated the possibility of cheaper, more capable fighting Machines, deployable without risk to aircrews. Initial generation primarily involved surveillance aircraft, but some carried armaments. In 2013 at least fifty countries used UAV's. Some developing and developed countries like China, Arab countries designed their own UAV's by their own. This development strives towards the technological development of UAV's. Hover Surf Drone is an advanced technological miniature Application which was developed by Dubai which can be loaded with a weight of 189 pounds. Hover Surf Drone uses principle and working of UAV – Drone.

Unmanned Aerial Vehicle

An unmanned aerial vehicle, usually known as a Drone, is an aircraft without a human pilot. Unmanned Aerial Vehicle is a component of an Unmanned Aircraft System which includes a ground based controller, UAV, communication Systems. The UAV's can be operated in various anatomies. It can be operated through remote control by a human operator or autonomously by onboard computers or programmed microcontrollers.

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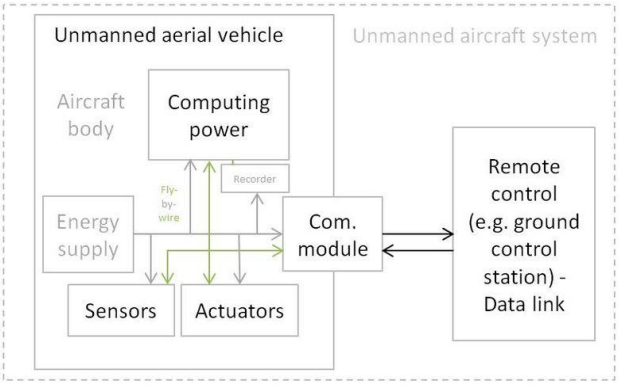
Mostly UAV's are used for missions and other fields where it causes dangerous for humans. Mostly Drones are expanding its place towards commercial, scientific, agriculture, aerial photography, recreational, surveillance, product delivery, smuggling and drone racing.
Civilian drones now vastly extended its area into military, with estimates of over a million sold by 2015, so they can be sees as an early commercial application of Autonomous Things.

A UAV is defined as a "Powered aerial vehicle" that cannot carry a person, which flies autonomously or by remotely controlled which can carry a lethal or nonlethal payload.

Physical structure of UAV

The unmanned and manned aircrafts are similarly the same with some similar physical components. The exceptions of the manned and unmanned aircrafts are the cockpit and the environmental control system or the life support system. Some of the unmanned aircrafts may carry payloads such as camera and other such components which are very lower to the weight of an adult. Such application of UAV is a Quad copter has become very popular, though this layout is rarely used for manned aircrafts. Quad copter is a miniaturization model of a manned aircrafts which has a small battery, propulsion systems, batteries etc.



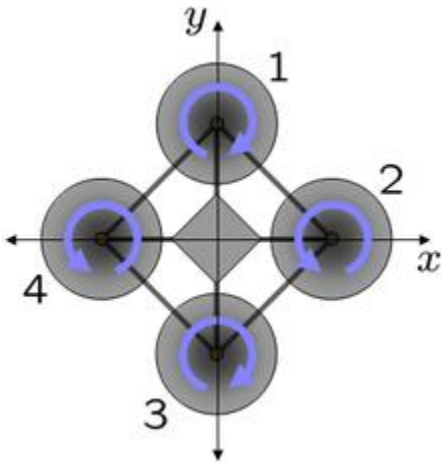
The main components of the UAV are the aircraft body, power supply, sensors and actuators, communication modules and the remote control if the aircraft was operated or manually controlled from ground base. The cockpit and the control systems are the main difference from manned aircrafts.

Quad rotor Helicopter

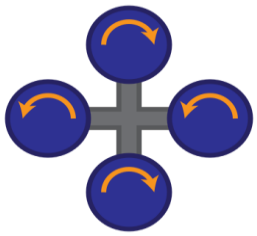
A quad rotor Helicopter is also called as Quad copter which is an unmanned aerial/aircraft vehicle is a multi rotor helicopter that is lifted and propelled by four (Quad) propellers/rotors. Quad copters generally use two pairs of identical pitched fixed propellers, which two propellers or rotor rotates in clockwise direction and other two rotors or propellers rotates in counter-clock wise direction. This opposite rotation of propellers enables the quad copter to control its stability while flying and can achieve the highest thrust. These types of UAV's are the first successful heavier-than-air vertical take-off and landing (VTOL) vehicles. Quad copters are small in size, cheaper in price, less complexity in mechanical technologies when compared with the conventional helicopters. Due to their ease of construction, cost and control quad copter aircraft are frequently used as amateur model aircraft projects.

Flight Dynamics

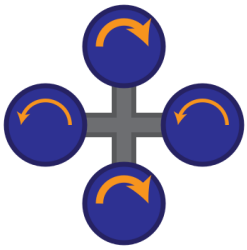
Each rotor generates both thrust and torque about its centre of rotation and also it produces the drag force against to the direction of the vehicle. If all the four rotors are spinning at the same angular velocity, with rotors one and three rotating in clock wise direction and the rotors two and four are rotation in counter clock wise direction, the net aerodynamic torque and hence the angular acceleration about the yaw axis is exactly tends to zero, which means there is no need of a tail rotor to change its direction as of in conventional helicopters. Yaw is induced by mismatching the balance in aerodynamic torques.



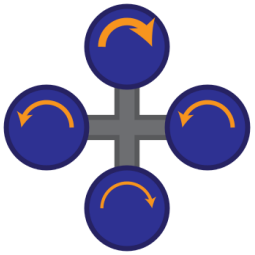
The quad copter hovers or adjusts its altitude as to stable its position while in the air by applying equal thrust to all four rotors.



A quad-rotor applies more thrust to one direction rotating rotors as to change its yaw position as to turn its position.



A quad-rotor applies more thrust to one rotor to adjust its pitch or roll and provides less thrust to its diametrically opposite rotors.



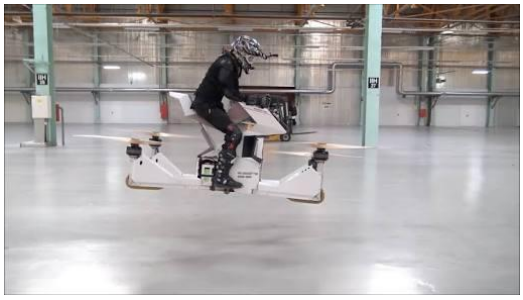
A coaxial rotor configuration can be applied to allow more power and stability at reduced weight. Best performance and simplest control algorithms can be achieved by placing the parts and components at equidistant. The PX4 Autopilot system is an open source software/hardware combination in development since 2009, has since been adopted by both hobbyists and drone manufacturing companies alike to give their quad copter projects flight control capabilities.

Hover Surf Drone

The latest prototype, a single-seat, electric powered hover-surf is a combination of motorcycle with quad-copter drone technology to create an extreme sports vehicle.

The electric-borne aircraft is intended for both amateur and professional navigators. Hover-surf can carry up to 19 stone in weight while hitting at speeds of 30 miles per hour and reach an altitude of 33 feet.

This hover surf can stay airborne for up to 27 minutes. An inbuilt safety mechanism limits the maximum speed and altitude of the aircrafts in order to prevent accidents. As the rotors pick up speed, the aircraft rumbles into life and tilts forward and the rear of the body lift upward. This prototype of drone "Hover-surf" can lift up to 189 pounds of weight.



II. CONCLUSION

The growing trend in the drone technology could lead to a revolution in everyday transportation. Hover-surf gives us the freedom to fly. The autonomous vehicle which was fully automated with sensors and actuators with SoC with higher technological control systems enables the driver nor to have driving license or pilot license to drive this Hover-surf drone. The fully autonomous self control drone strives to fly by it or by operating controls.

REFERENCES

1. Getting started with Hobby Quad-Copters and Drones – Craig Issod.
2. Military Unmanned Aerial Vehicles (UAV). "Smithsonian National Air & Space Museum". Smithsonian, n.d.web, 17 Nov, 2012.
3. "Spies that Fly – Time Line of UAV's" PBS.org/NOVA.PBS,Nov 2002.web 17, Nov 2012.

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