

# Wi-Fi de authenticator using UAV

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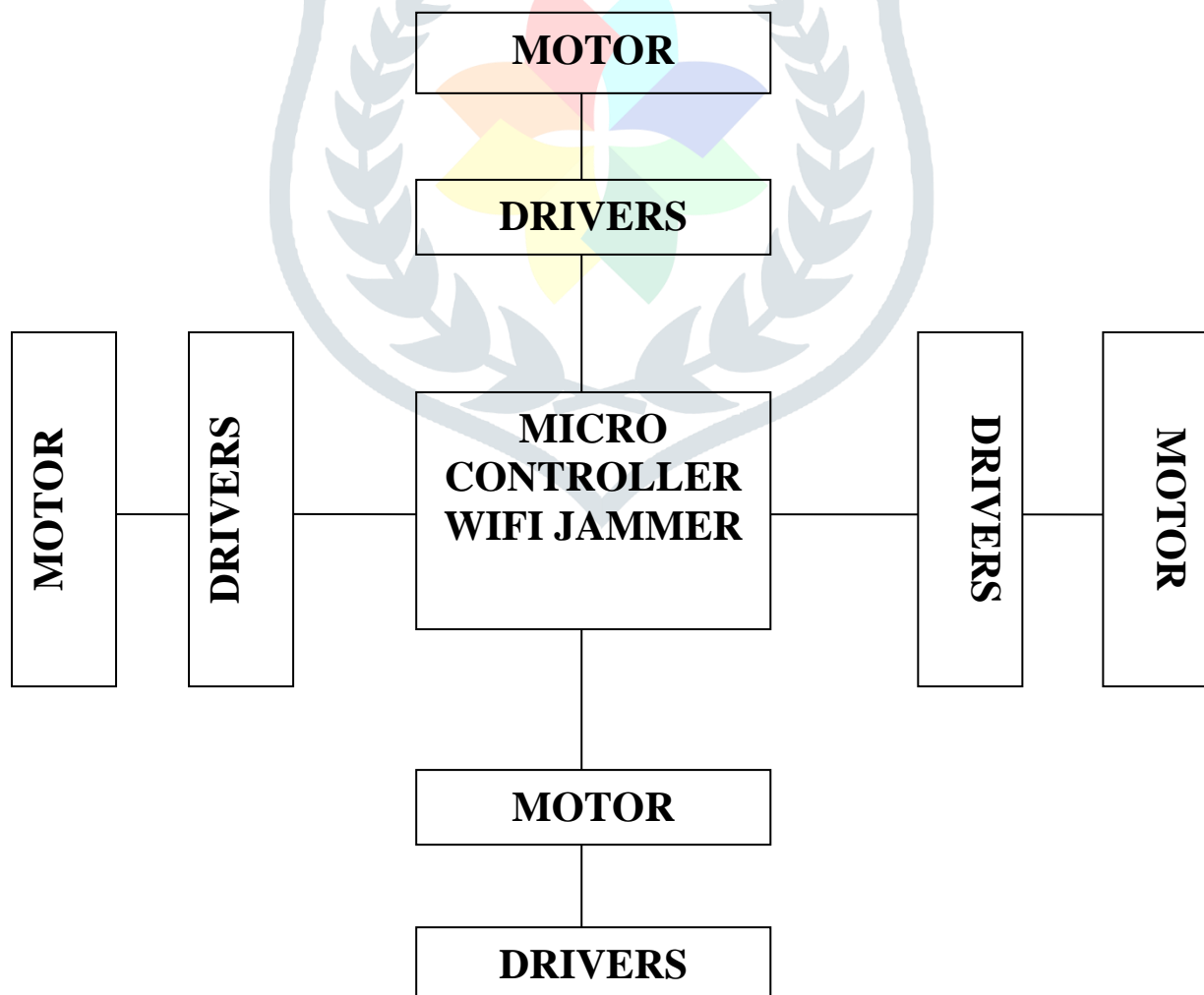
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**Abstract:** Unmanned Aerial Vehicle (UAV) can be used to implement many applications these days. Mostly it is used for aerial surveillance and reconnaissance. Our idea is to equip a UAV with Wi-Fi De-authentication system. This idea can be used to cease communication of any Wi-Fi enabled devices. It can be useful while various special operations where in the location or the activity of the hacker should be in disguise. Here the De-authentication system is a standalone system. The frequency of the system does not interfere with the UAV Communication frequency.

**Index Terms**– Quadcopter, UAV, NodeMCU.

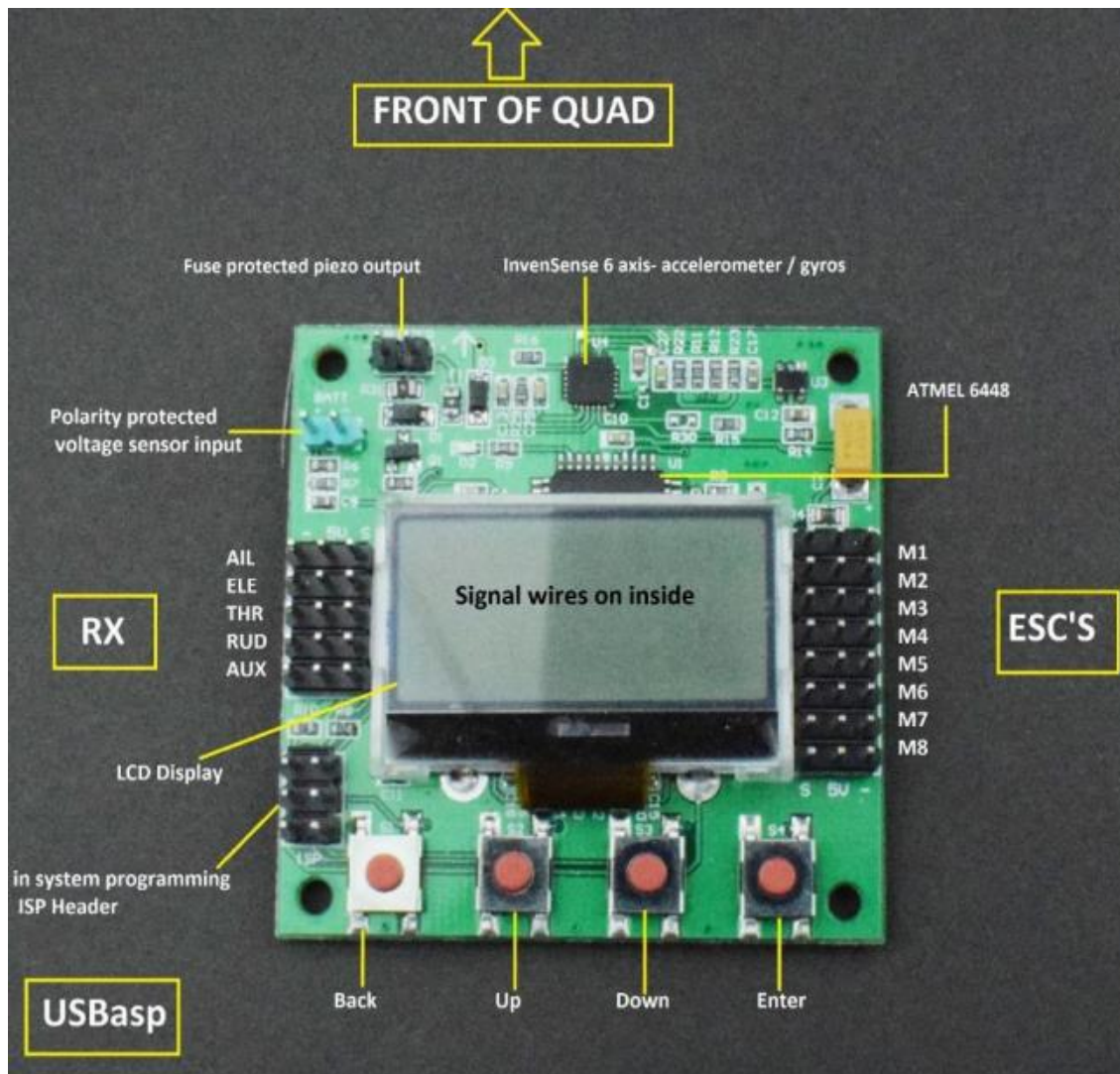
## I. INTRODUCTION

Quad copters are Unmanned Ariel Vehicle (UAV), generally a helicopter that is lifted and propelled by four rotors. Initially they were used as toys, but later they gained importance and recent research on multi-copters has received growing attention for military, agriculture, photography, surveillance, news, sports, search or rescue missions and much more. The widespread use of Unmanned Ariel Vehicles and its growing applications in various domains can be attributed to their ability to operate in inaccessible and remote areas thus providing a helping hand in critical situations. We have proposed an idea about how a Quad copter can be used in such applications in our society. We intend to implement a Wi-Fi jamming system on a quadcopter.



## II. PARTS

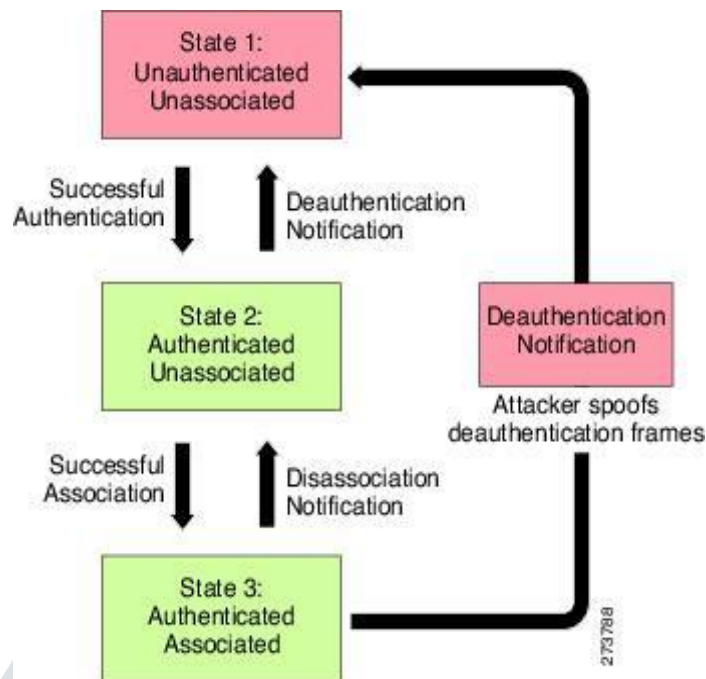
### A) Microcontroller or Flight Controller



KK2.1 Multi-Rotor controller manages the flight of (mostly) multirotor Aircraft (Tri copters, Quadcopters, Hex copters etc.). Its purpose is to stabilize the aircraft during flight and to do this, it takes signals from on-board gyroscopes (roll, pitch and yaw) and passes these signals to the Atmega324PA processor, which in-turn processes signals according the users selected firmware (e.g. Quadcopter) and passes the control signals to the installed Electronic Speed Controllers (ESCs) and the combination of these signals instructs the ESCs to make fine adjustments to the motors rotational speeds which in-turn stabilizes the craft. The KK2.1 Multi-Rotor control board also uses signals from your radio system via a receiver (Rx) and passes these signals together with stabilization signals to the Atmega324PA IC via the aileron; elevator; throttle and rudder user demand inputs. Once processed, this information is sent to the ESCs which in turn adjust the rotational speed of each motor to control flight orientation (up, down, backwards, forwards, left, right, yaw).

### B) Wi-Fi Jammer

This firmware allows you to easily perform a variety of actions to test 802.11 wireless networks by using an inexpensive ESP8266 Wi-Fi SoC (system on chip). The main feature, the DE authentication attack, is used to disconnect devices from their Wi-Fi network. With a device like this you can disable the Netflix streaming of your roommate, the wireless security cameras of the mall or your neighbor's Internet of Things gadgets. The 802.11 Wi-Fi protocol contains a DE authentication feature. It is utilized to detach customers from network. An attacker can send a station a DE authentication frame at any time, with a spoofed source address for the wireless access point. The protocol does not require any encryption for this frame, even when the session was established with. This vulnerability was addressed in 802.11w-2009 an approved amendment to the IEEE 802.11 standard to increase the security of its management frames, rarely supported is off course disabled by default.



### III. QUADCOPTER CONCEPTS

Quad copters use 2 sets of identical fixed pitched propellers, 2 clockwise and 2 counter-clockwise. These use variation in RPM to control lift and torque. Control of vehicle motion is achieved by altering the rotation rate of one or more rotors, thereby changing its torque load and thrust lift characteristics. The propellers will rotate accordingly as shown in Fig 1. Fig 1 shows the structure model in hovering condition, where all propellers have same speed. The Quad copter has 4 degrees of freedom which are 1 translational i.e. upward lift and descending altitude and 3 rotational i.e. roll, pitch and yaw. The rest of the 2 translational motion are caused due to roll and pitch therefore we do not consider them in degree of freedom.

Its basic movements can be described as follows:

#### A) Throttle

Increasing or decreasing the all the propeller speeds by the same amount. It leads to a vertical force which raises or lowers the copter. If the copter is in horizontal position, the vertical direction of the inertial frame coincide. Otherwise the provided thrust generates both vertical and horizontal accelerations in the inertial frame.

#### B) Roll

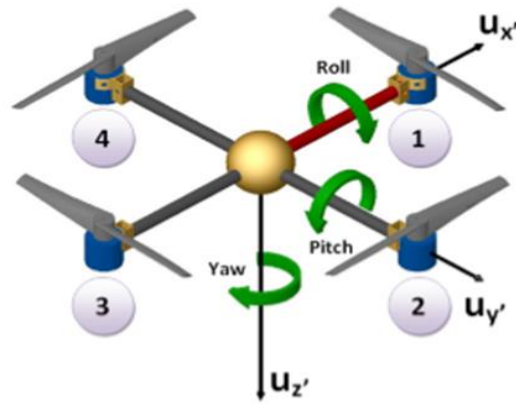
Increasing (or decreasing) the left propellers speed and by decreasing (or increasing) the right one. It leads to a torque with respect to the X axis in horizontal plane which makes the copter turn. The overall vertical thrust is the same as in hovering, hence this leads only to a roll angle acceleration.

#### C) Pitch

Similar to the roll and is provided by increasing (or decreasing) the rear propellers speed and by decreasing (or increasing) the front one. It leads to a torque with respect to the Y axis in horizontal plane which makes the quadcopter turn. The overall vertical thrust is the same as in hovering; hence this leads only to a pitch angle acceleration.

#### D) Yaw

Increasing (or decreasing) the clock wise propellers speed and by decreasing (or increasing) that of the counter-clockwise couple. It leads to a torque with respect to the Z axis which makes the quadcopter turn. The yaw movement is generated when the overall torque is unbalanced; the quadcopter turns on itself around Z axis. The total vertical thrust is the same as in hovering, hence this leads only to a yaw angle acceleration.



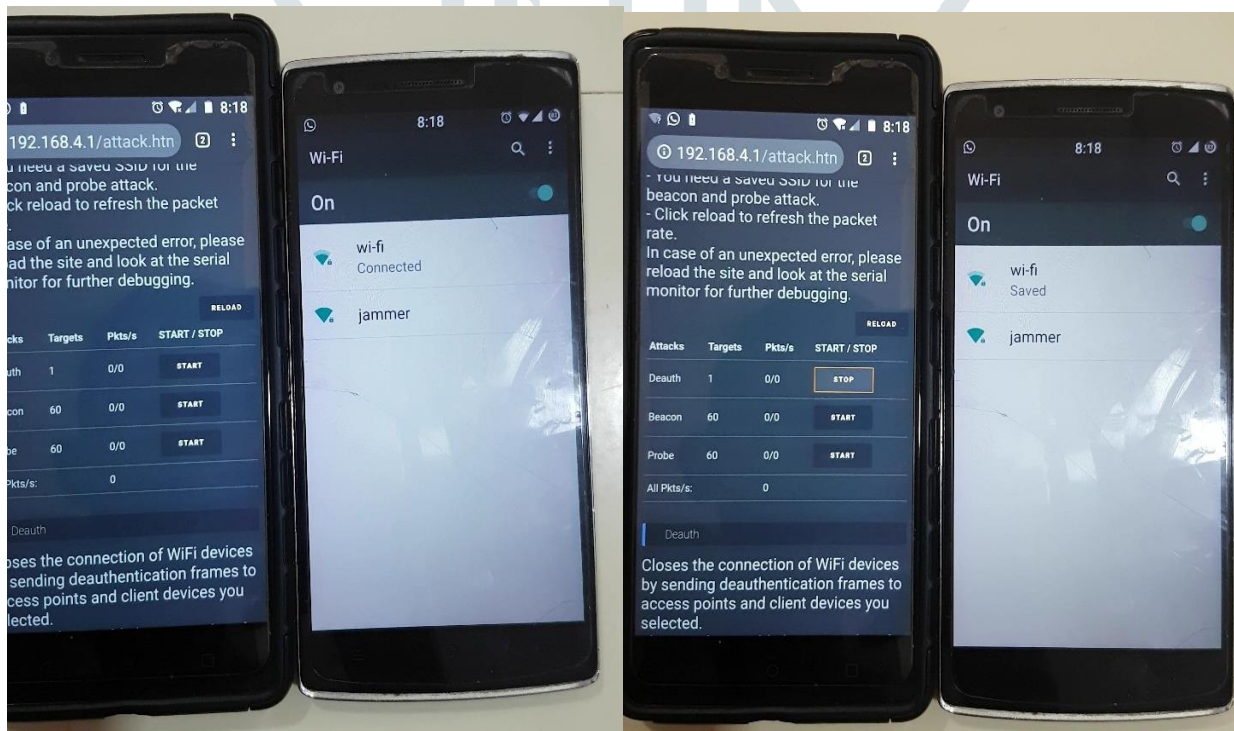
#### IV. RESULTS

##### A) Quadcopter





B) Wi-Fi De-authentication System



Open the webpage of corresponding Jammer by entering the respective IP address. The list of available APIs' will be displayed. Make sure that some other device is already connected to the API to be jammed. Click on start which will start the DE author process. The respective API will be jammed and the connection between the device and the API will be lost. Thus, we have successfully jammed the Wi-Fi network.

V. ACKNOWLEDGMENT

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