

Implementation of Trespass Surveillance through Drone Approach during Critical Emergencies

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ABSTARCT

In day today world ,enormous advancement in new technologies can be seen in faster way facilitating human life style and through machine automized work, human work become easy as machine involvement in human work facilitating speedy task completion at lower time frame. Even in this vast technological advanced world. Invasion of intruders in other national territories is seemed to seen in higher rate now a days. Each and every nation all over the globe were strengthening their human forces in all ways to secure their nation from the intruders. Recently modern equipments with latest technology were involved in safe guarding the nations in all the ways. Advancement can be seen in all the sector of the globe. In the proposed study Modern Innovation were used for monitoring the intruders in national borders both in land area and sea area. Modern innovation in armed forces of nation is regularly explored and created by researchers and designers particularly for use in fight by the safeguarding authorities. Numerous new advances came as an aftereffect of the armed forces financing of science. Weapons engineering is the outline, advancement, testing and lifecycle administration of armed forces weapons and systems. It draws on the learning of a few customary designing controls, including mechanical designing, electrical engineering, mechatronics, electro-optics, aviation design, materials building, and synthetic building. Quick improvement in armed forces innovation dramatically affected armed forces and naval forces in the industrialized world. In this paper, we proposed the usage of drone in armed forces for national border surveillance both in land as well as sea area and to attack the intruders through artificial intelligence.

KEY WORDS: Artificial Intelligence (AI), Robotics, Drone, Unmanned Aerial Vehicle (UAV), Unmanned Aircraft systems (UAS).

1. INTRODUCTION

Innovation is the accumulation of strategies, aptitudes, techniques and procedures utilized as a part of the generation of products or benefits or in the achievement of destinations, for example, logical examination. Innovation can be the information of methods, procedures, and so on or it can be embedded in machines, PCs, gadgets and processing plants, which can be worked by people without any learning of the workings of such things. The human species utilization of innovation started with the transformation of characteristic assets into basic tools. Developments in the past, including the printing press, the phone, and the Internet, have decreased physical obstructions to correspondence and permitted people to connect unreservedly on a worldwide scale. The enduring advancement in armed forces has brought weapons of steadily expanding ruinous power, from clubs to atomic weapons. Innovation has numerous impacts. It has grown more propelled economies and has permitted the ascent of a recreation class. Different usage of innovation impact the estimations of a general public and new innovation incorporate the ascent of the idea of proficiency regarding human profitability, a term initially connected just to machines, and the test of conventional standards.

Robotics: Robotics is the branch of mechanical building, electrical building and software engineering that arrangements with the plan, development, operation, and utilization of robots, and additionally computerized frameworks for their control, feedback, and data processing. These advancements manage mechanized machines that can replace people in risky situations or assembling forms, or look like people in appearance, conduct, or potentially discernment. Today, Robotics is a quickly developing field, as innovative advances keep; investigating, outlining, and constructing new robots fill different functional needs, whether locally, monetarily, or militarily. Numerous robots are worked to do tasks that are dangerous to individuals, for example, defusing bombs, discovering survivors in flimsy destroys, and investigating mines and wrecks. Robotics is additionally utilized as a part of STEM (Science, Technology, Engineering, and Mathematics) as an instructing help. As more robots are intended for particular undertakings this strategy for grouping turns out to be more important. Robotics application like drone can give media access to hard-to-reach places. Aerial photography for a news broadcast or a blockbuster film can be efficiently, economically, and safely captured by a UAS.

Artificial Intelligence and Drone surveillance Technology: Artificial Intelligence (AI) is a general term that suggests the utilization of a computers to demonstrate and additionally imitate smart conduct. Examine in AI concentrates on the advancement and investigation of calculations that learn or potentially perform wise conduct with insignificant human intercession. These methods have been and keep on being connected to an expansive scope of issues that emerge in mechanical technology, e-trade, medicinal analysis, gaming, arithmetic, and military

arranging and coordination's, to give some examples. A few research bunches fall under the general umbrella of AI in the office, yet are teaches in their own privilege, including robotics, natural language processing (NLP), computer vision, computational biology, and e-commerce.

Drone Technology otherwise called as unmanned aerial vehicle (UAV) or unmanned aircraft systems (UAS) technology is always developing as new advancement and huge speculation is conveying more propelled automatons to the market at regular intervals. Drone Technology on a standout amongst the most prevalent automatons available which has a lot of top automaton innovation. Most automatons will have fundamentally the same as frameworks fused. Unmanned aerial vehicle Technology and science in the amplest viewpoint covers everything from the optimal design of the automation, materials in the make of the physical UAV, to the circuit sheets, chipset and programming which are the brains of the automaton. This UAV is perfect to clarify ramble innovation since it has everything in one bundle. It incorporates the UAV, gimbal and camera and uses a portion of the top automaton innovation available today.

Architecture of the Proposed System: Controlling Module Architecture:

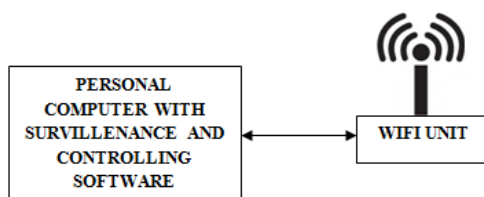


Figure.1. Administrator controlling unit

Transmitter Module Architecture:

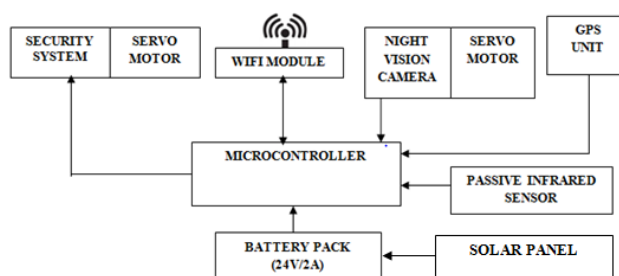


Figure.2. Transmitter unit in drone

Modules of the System:

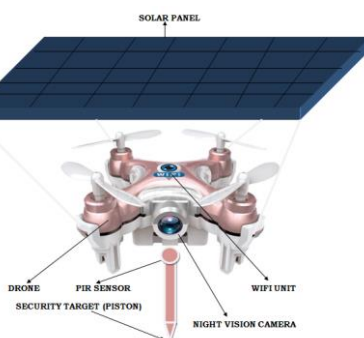


Figure.3. Proposed Drone Model

Transmitter Module: In this module, the UAS moves according to the instruction provided to it by the administrator, who operates it from a remote area. The UAS captures videos through the high resolution camera connected to it while flying and moves in the direction as per the instructions provided by the administrator. UAS as PIR sensor which detects the human and sends the signal to the administrator and if the administrator provides the command to attack the specified target. The UAS attacks the target through its security system embedded with its body. UAS communicates with its administrator by means of WIFI unit connected within it. The Transmitter module obtains its power supply for its working by means of battery supply and which turn connected with a solar panel. Working of UAS is facilitated by natural means (Solar energy utilization) as well as the mechanical energy obtained by the movement of drone fans can be converted into electrical energy as it can also be used for battery backup for the working of UAS.

Controlling Module: In this module, the administrator of UAS will control the movement of the UAS and monitors the movements through the monitor screen. The administrator posses unique control system for controlling the drone

and also the monitor screen to see the live video capture by drone through the camera attached to it. The control instruction given by the administrator is communicated to the drone by means of WiFi module connected with the control system. The controlling system comprises of a Personal desktop monitoring system, WiFi module and securitized UAS controlling software.

WiFi Module: WiFi module is for enabling communication in between transmitter module and the receiver module by means of Internet. WiFi module make use of latest 4G technology for information sharing in between the transmitter (Drone) and the receiver module.

Working of the system: Working of the UAS is completely through remote controlling mechanism by the administrator and the UAS works accordingly as per the instruction provided to it by the administrator.

Components used in the proposed system:

Night Vision Camera: Night vision technology, actually permits one to find oblivious. It is initially created for military utilize. Humans have poor night vision contrasted with numerous different creatures. Night vision camera utilized here is specialized night vision camera and it is arranged under extensions.

Microcontroller: The microprocessor used here is STM32F4DISCOVERY, this is a user friendly and low cost kit to developing high performance controller at low cost. The STM32F4DISCOVERY kit allows developers to develop high performance controller applications with ARM® Cortex®-M4 32-bit core easily with the STM32F407. It includes an ST-LINK/V2 or ST-LINK/V2-A, which is an embedded debug tool.

Passive infrared sensor: A passive infrared sensor (PIR sensor) used here is an electronic sensor that calculates infrared (IR) light radiating from objects from its view point. PIR sensors operates through detecting the energy emitted by other objects. PIR sensors detect the infrared radiation emitted or reflected from an object.

GPS Device: The GPS (Global Positioning System) used here is offline GPS. Which is for navigation purpose, which is for the movement controlling of the drone. Offline GPS unit is embedded with the controller.

Servo Motor: Servos motors used here were controlled by pulse width modulation (PWM), by means of a control wire. Where we can see a minimum pulse, a maximum pulse, and a repetition rate. A servo motor can turn 90 degrees in all direction for a total of 180 degree movement. Servo motor rotates both the clockwise or anti clockwise ways. The PWM sent to the servo motors controls the position of the shaft based on the time frame of the communicated pulse sent by means of a control wire.

Solar Panel: Solar panel is used here to absorb the sun's rays as a source of energy for generating electricity. A solar cell or photovoltaic cell is an electrical device that converts the energy of light directly into electricity by the photovoltaic effect, which is a physical and chemical phenomenon.

Battery Power: Battery supply used here is a rechargeable battery NiMH (Nickel-Metal Hydride). This is a electrical battery which can be charged, discharged into a load, and recharged many times upto 300 to 800 times. It as the storage capacity of 2700 mAh. The power generated by means of the solar panel is stored in the battery and this is used for the operation of the UAS.

Wifi Device: WiFi Module used here is ESP8266. This WiFi Module is a self contained SOC with integrated TCP/IP protocol stack that can give any microcontroller access to your WiFi network. The ESP8266 is capable of either hosting an application or offloading all Wi-Fi networking functions from another application processor. Each ESP8266 module comes pre-programmed with an AT command set firmware. This module is highly powerful in its processing and it also posses storage capability that permits to embedded it with the sensors and other various applications.

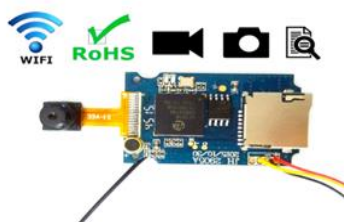


Figure.4. WiFi enabled night vision camera



Figure.5. Microcontroller



Figure.6. Passive Infrared Sensor

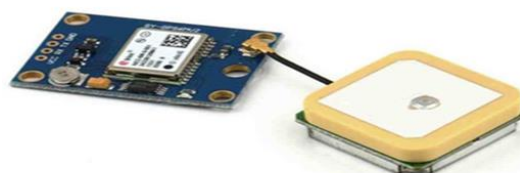


Figure.7. GPS device

**Figure.8. Solar Panel****Figure.9. Battery (Power supply)****Figure.10. Wifi Device****Figure.11. Servo Motor**

2. CONCLUSION

Drones make its use in various practical applications and the posses several advantages like they can save lives. In normal and synthetic debacles, Drone scan be situated to overview harm, find stranded and harmed casualties, and survey continuous dangers without taking a chance with the wellbeing of save groups and people on call. They can bolster law implementation. UAS can be utilized to hunt down lost youngsters, give strategic observation and suspect following, help with mischance examinations, and screen substantial group. They can add to safe framework support and management. Consider the trouble of assessing the underside of an extension or the highest point of a high rise, also the expenses and dangers. With UAS, framework, cranes, or outfits are not required. Simply send the framework to survey the structure's condition remotely. They can streamline agribusiness administration. Utilizing a product administration framework to watch, measure, and react to fluctuation in individual plants, agriculturists can target regions requiring consideration. By pinpointing these territories, agriculturists can give mind just where required enhancing yield, preserving assets, and maintaining a strategic distance from waste. And the very important thing is they can give media access to hard-to-achieve places. Aeronautical photography for a information communicate or a blockbuster film can be proficiently, monetarily, and securely caught by a UAS.

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