

INTERNET OF MILITARY THINGS

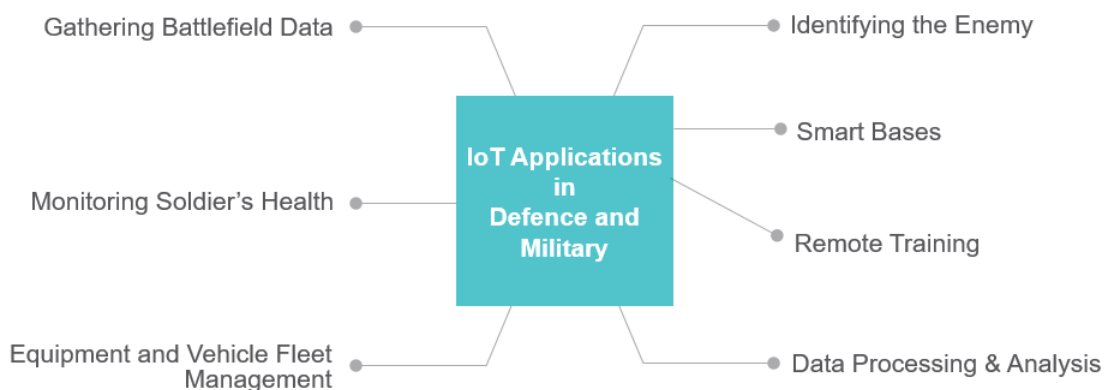
ASSIGNMENT 1 - SM5033

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The most crucial component of any network, whether it be a network of devices or a community of humans or animals, is communication. Higher-speed data transfers, larger networks, and smarter things are required to enable communication inside a device network. Only the Internet of Things makes it possible for things to communicate with one another (IOT). IOT can connect several domains with one another to enable smarter communication between things. The Internet of Things (IoT) is a rapidly developing technology that improves and speeds up communication. In numerous fields, IoT has established supremacy. Today's environment requires the use of IoT in military applications since anti-military actions have gotten worse and are now a threat to nations. Because battle fighters lives are so valuable, it is crucial that we do everything in our power to safeguard them.

For modern battle operations and intelligent warfare, the Internet of Military Things (IoMT) is a subset of the Internet of Things (IoT). It alludes to actual physical items used in the military that have sensors, software, and other technology built into them. These objects talk with one another to gather and transfer data over the internet in order to carry out a variety of tasks more effectively and intelligently. In IoMT, the sensors are built into the soldiers' gear, including their helmets, battle suits, and weapons systems. These sensors gather a range of biometric data, including information about the subject's iris, face, fingerprints, heart rate, movements, and facial expressions.

Different IoMT applications and methodologies like military ammunition, gathering battlefield data, monitoring soldiers health etc, can be implemented.



Applications of IoMT

1. Gathering Battlefield Data

Armed forces can scan the battlefield using unmanned aerial drones that are fitted with cameras and sensors, thanks to IoT. These drones can relay real-time data to the command center, record

live photos, and track the terrain and locations of the enemies. Officers can monitor the battlefield and quickly make decisions using this data.

2. Proactive health surveillance

Knowing a soldier's health state is another use of IoT in defence and the military. To track or centrally monitor the soldier's physical and mental wellbeing, sensors are inserted into their uniforms. Sensors can keep an eye on things like speech patterns, body temperature, and heat distribution in addition to heart rate. Doctors can make advance arrangements for medical equipment or supplements based on their needs by sharing real-time information about their patients' changing medical conditions with them.

3. Equipment and Vehicle Fleet Management

A successful military operation depends on effective delivery of personnel and ammunition as well as routine maintenance of military vehicles. IoT technology's connected sensors and analytics make it possible to trace goods from their point of origin to the locations on the battlefield where they are needed. Military vehicles may track their location, fuel economy, degree of damage, engine condition, and other critical parameters with the use of sensors. Military fleets can rapidly see discrepancies and put remedies into place thanks to the smart tracking of defence and military vehicles. They can cut their transportation expenses and operational labour expenditures thanks to this. Similar to this, sensors can also be used to track weapons, ammo, and unmanned equipment. Sensors built into weapons can assist soldiers in knowing when to reload. During surveillance and eavesdropping on hostile territory, unmanned devices can be traced and observed.

4. Identifying the Enemy

With stolen badges or by posing as civilians, enemies can enter military installations. IoT sensors may collect fingerprints, iris scans, and other biometric data to identify people and identify those who might be a threat.

5. Smart Bases

Military bases can use IoT sensors and devices to enhance the functionality, performance, and comfort of their equipment and services. It can aid in efficient resource management, automated screening, and other areas. Military sites can operate more efficiently and effectively if resources like water and power are managed wisely.

6. Augmented reality for remote Training

Military troops can prepare for the real war on the battlefield with the aid of IoT. During practise or preparation, movement sensors, acoustic sensors, and other devices can screen the employees and give data and insights to the coaches preparing them.

7. Data Processing & Analysis

The efficiency of its intelligence, surveillance, and reconnaissance systems can be improved by the information gathered by IoT concerning numerous defence and military areas, including weapons, aircraft, fleet, and personnel. Armed forces may be able to more accurately and rapidly identify major threats with the use of the data gathered in these regions. The data collected can be analysed by military personnel to find trends and establish relationships.

8. Target Recognition and Autonomous Reconnaissance

In a complex battle environment, AI techniques are created to improve target detection precision. These methods enable defence to develop a full understanding of potential operational zones through studies of reports, papers, news feeds, and other types of unstructured information. Additionally, AI improves these systems' ability to use target recognition algorithms to locate their targets.

Conclusions

The usage of IoT in the military and defence has become essential due to the rise in anti-military actions. By incorporating IoT into current military and defence infrastructures, combat casualties in terms of people and equipment can be greatly decreased. Integrating IoT into any form of activity, including search and rescue, scouting out an enemy base, and combat. The military and defence can be further assisted in obtaining crucial battlefield insights in real-time through the use of IoT and machine learning, allowing them to conduct successful operations.