Drone as Personal Assistant in Ambient Assisted Living Systems for the Elderly

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Abstract

Some of the inventions concentrate on how these drones can help in making life better, secure, and easier for the elderly. Some researches proposed the better daily activities and routines tracking drones based on the person's voice recognition strategies and also the person whether lying on floor or not. This system concentrates on making note of the daily activities and sending summary to the respective caretaker for the better health care. Also, the drone is automated with patient/person health tracking if in case there is change in blood levels, the patient will get to be known by the drone and respective medication will be suggested.

Introduction

Unmanned Aerial Vehicle (UAV) simply called Drone is the recent hot research topic with many new inventions. Today there are some IoT based applications on drones which ensure continuous and often real-time monitoring of the person and his/her surrounding environment, providing assessment and triggering assistance when necessary.

The emerging innovative developments are included in the quest for sensible solutions that will ensure the well-being of the elderly. The main technologies used include mobile sensor networks, cellular networks and IoT. Depending upon them, over the last decades, the so-called Ambient Assisted Living systems have become a major research subject. Advances in telecommunications, computer systems and miniaturization of sensors, combined with the omnipotence of wireless and connected devices, allow continuous monitoring.

Such Ambient Assisted Living Systems (AALS) have so far focused on tracking, evaluating and preventing hazardous circumstances in substantially stagnant and closed settings that limit elderly physical and socio-cultural presence. While there are many highly advanced applications a major problem with those advanced solutions is that they are standardized systems.

This poster presents the ongoing work on how the drone can help the elderly in simple way equipped with some sensors, GPS, critical thinking using some machine learning algorithms, etc. Moreover it is like a small robot which can analyze some of the situation of the person and then suggesting medicines. Also in case the person is under bed rest, if needs any assistance then it continuously regulates the person The ideal thinking of the implementation can be seen in Fig. 1.

Methodology

In this system, IMU 9DOF (3-axis accelerometer, 3-axis gyroscope & 3-axis magnetometer) will be used, which ensure drone's smooth movement, graceful motion, and trajectory tracking. Also, GPS and barometric sensor's which makes the drone more efficient in autonomous mode. This Work aims in designing a drone using the Raspberry Pi 3B+, Sensors, which flies based on the user's voice control (like a Google assistant) and as well as mild decision making by providing some deep learning algorithms.

Mindmap

Fig. 2 represents the Mindmap which explains the overview of the system components used while implementation and respective features it may include.

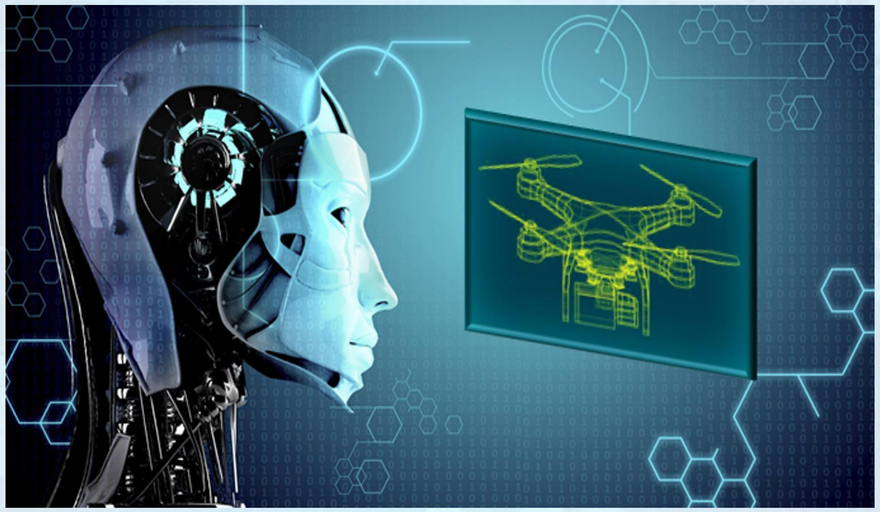

Fig. 1. Emerging Robot in Drone (ideal)

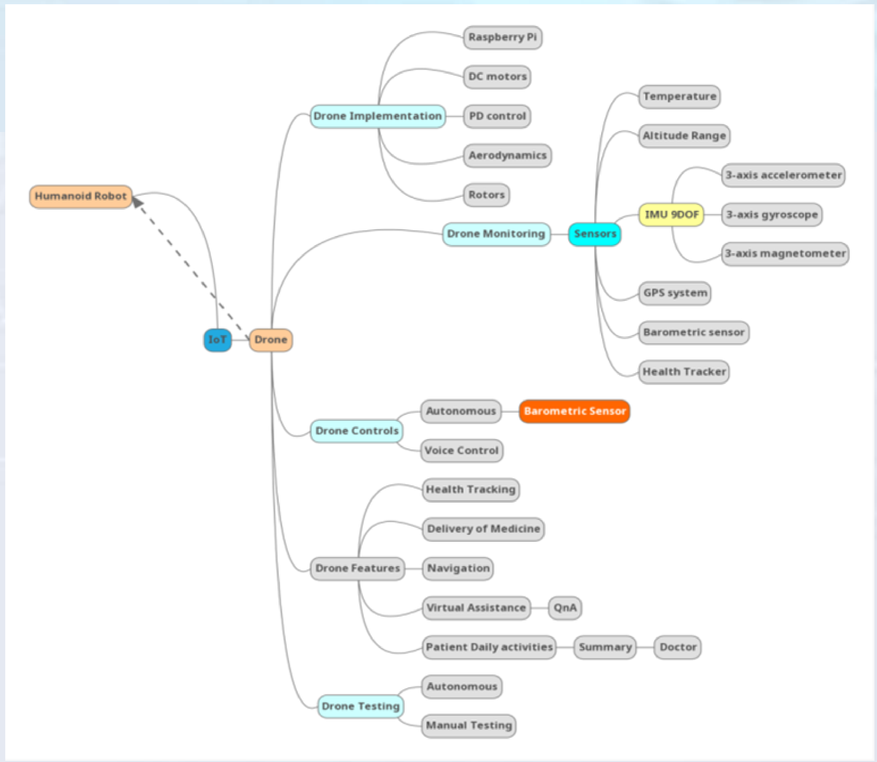

Fig. 2. Mindmap

Conclusion

There is a lot of research going on the usage of drones in Ambient Assisted Living (AAL) technology and many researchers proposed projects on drones for Elderly daily activities and routines tracking, this work concentrates on how drone can be used as a personal assistant to the elderly. In the future, this drone can be enhanced with some more features like adding decision making, helping the elderly people who have mild cognitive abilities. Fig. 3 represents the overview of the process flow in the Designed system.

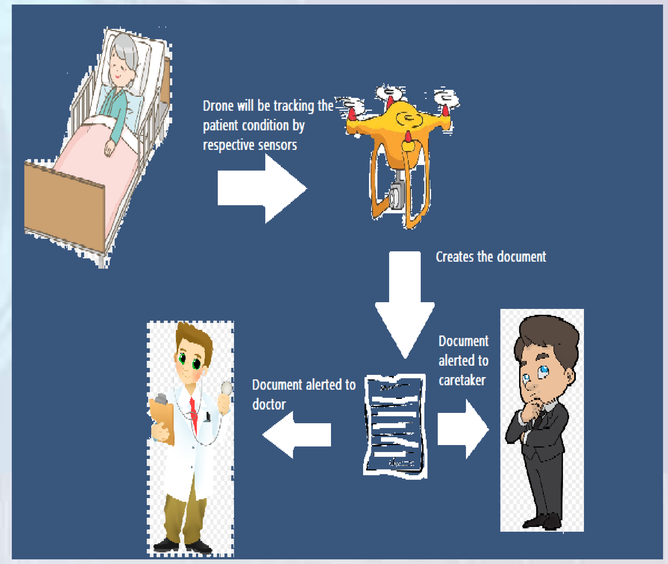

Fig. 3. Overview of Process flow

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