Chapter 7
Review on Recent Applications of Internet of Flying Things

Vanitha Veerasamy
Kumaraguru College of Technology, India

Rajathi Natarajan
Kumaraguru College of Technology, India

ABSTRACT

Unmanned aerial vehicles (UAVs), typically known as drones, are aerial machines that can be programmed and controlled remotely using mobile devices and are connected via wireless communication technology. Because of their ease of deployment, dynamic configuration, low maintenance costs, high mobility, and faster reaction, they are becoming more widely used in a variety of applications. As a result, a new paradigm known as flying ad hoc networks (FANETs) has emerged, which is a subset of mobile ad hoc networks with special aviation-related properties. FANET ideas have been combined with the internet of things (IoT), resulting in the internet of flying things (IoFT), a paradigm that enables a significant new level of applications, solves existing challenges in UAVs and IoT, and broadens the spectrum of potential uses. This study focuses on various IoFT applications and challenges in IoFT implementation.

INTRODUCTION

The Internet of Things (IoT) is a prominent technology with applications in different domains. Millions of devices are connected to each other and to the Internet in an IoT system. Healthcare monitoring, remote patient monitoring, environmental

DOI: 10.4018/978-1-6684-3610-3.ch007

monitoring, precision agriculture, energy monitoring and transportation systems are all examples of where IoT is applied. In addition, the Internet of Things (IoT) is a key technology for creating smart cities.

Now-a-days Unmanned Aerial Vehicles (UAVs) are used for variety of military and civilian applications. UAVs are small size aircrafts. A UAV is made up of a variety of sensors, actuators, compute units and storage units. The combination of UAVs and the IoTs is a new emerging direction for academia and industry. IoT allows devices to connect to any network, at any time, to provide any service. UAVs can be used for a variety of functions in UAV-based IoT. UAV based IoT is called as Internet of Flying Things.

This paper is organized as follows: Section 2 delves detailed introduction to Internet of Flying Things (IoFT), section 3 deals with IoFT applications. The section 4 lists the challenges and chapter 5 gives the concluding remarks.

OVERVIEW OF INTERNET OF FLYING THINGS

The IoFT is an emerging area having wide variety of application possibilities. On the Internet of Things, the UAV is a critical component. The following section explains about UAV, multiple-UAV systems, FANETs, and IoFT in detail.

Unmanned Aerial Vehicle (UAV)

The rapid technological advancement in the communication technologies, avionics and micro electromechanical system has paved the path to new UAV systems. UAV is also known as Drone, is a flying vehicle or an aircraft. UAVs can fly autonomously with the help of on-board computer and usually without human or it can also be operated remotely by a human operator (Hassanalian & Abdelkefi, 2017). These UAVs are capable of flying a few thousands of kilometres and also capable of carrying lethal or nonlethal payloads. The UAVs are categorized into different types based on weight and range, landing, rotors etc. The classification of UAVs is shown in the figure 1.

The characteristics of UAVs include easy installation and relatively small operating expenses. The UAVs are used in a variety of situations where the presence of humans is difficult, impossible, or dangerous. They are capable for performing in both outdoor and indoor locations as well as in very challenging environments. UAVs are used in both military and civilian applications. In military, these UAVs provide an insight about the specific areas easily. UAVs mounted with specialized cameras are capable of providing quality images even about the dark areas. Small size micro UAVs are mainly used to investigate indoor areas. Micro UAVs are