Security Protocol with IDS Framework Using Mobile Agent in Robotic MANET

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ABSTRACT

Nanotechnologies guarantee new potential outcomes for maintaining accessibility issues in versatile robots in an automated based Mobile Adhoc Networks (MANETs). In multi-robot frameworks, with a devastation situation, military applications, hunt and save operations and normal hardships, this issue is much more basic. Auspicious correspondence and sending control messages in a MANET which is reasonable for these intense circumstances starts with one robot then onto the next is a critical factor in every one of these operations. This makes it a security issue in MANETs because of the auto-reconfiguration nature of the system which does not depend on any settled infrastructure-based foundation. There is dynamic change in its topology because of rapidly moving versatile nodes. This article features few security issues emerging because of network matter among robots and proposes a lively MANET-based automated convention called PD-ROBO with a committed Intrusion Detection System (IDS) structure that utilizations portable operator method to stay away from replay assault in mechanical based MANET.

KEYWORDS

IDS, MANET, Mobile Agent, Multi-Robot System, Replay Attack, Robotics

INTRODUCTION

MANETs are specific systems that work with no framework and enable portable clients to stay associated. These are helpful systems to broaden the correspondence in misfortune circumstances. A noteworthy testing issue in both Mobile Adhoc Network and Robotics is to control and finish legitimate correspondence with each other and the administrators. There are some particular reason multi-robot frameworks which shape MANET amid hunt and safeguard operations (Weiss et al., 2008), whose execution are enhanced by people to supplement singular ability (Soumitra et al., 2005). In numerous applications like catastrophic events or in combat zones the foundation may not be there or if there then it has harmed, so it requires arrangement of various versatile robots to make a MANET for brief timeframe (Tutuko et al., 2014). Plan and usage of a productive correspondence convention is particularly fundamental in Mobile Robot Systems. Yet, being security is a noteworthy concern in such circumstance a defensive IDS (Pattanayak et al., 2014) can be intended for particular gathering of Robot swarm with some enlistment approach so the application is devoted to a group of stations.

DOI: 10.4018/IJISP.2019010104

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The presence of new portable mechanical gadgets, for example, automatons and remote-controlled vehicles, offers open doors for future administrations. In the meantime, this unrest brings new difficulties up in unmanned automated system outline. The most basic issue is the trouble of steering in a system with effectively disengaged highlights. Existing topology-based steering conventions and many other network challenges (Semenova et al., 2015) tend to build the directing expense because of their necessity of the whole course development. In such case Geographic steering is one of the promising answer for diminishing directing control overhead (Jung et al., 2017). Quality of Service satisfaction in robotic communication is also an additional challenge (Marcotte et al., 2016).

RELATED WORK

There are many concerns related to proper communication among mobile robots in MANETs which are described by many researchers from time to time. Along with proper communication capacity, the MANET should provide position data and information to support the localization property of the robots and humans which are of great importance to properly control the human along with robots to special targets (Witkoski et al., 2008). The GPS system can provide the position data for outdoor applications. For such type of applications, every node of an adhoc network must have knowledge of its location autonomously. Witkoski et al., 2008 presented a mobile adhoc network design which is to be used in large burning industrial warehouses. This network supports the assisting group of the robots as well as the fire fighters with a communication infrastructure as positional data. The issue of connection preserving for longer period has been discussed (Kornejo et al., 2009). The most proposed solutions are to strictly preserve connectivity while performing specific tasks (convergence of robotic points, (Kim et al., 2008). Designing of robust algorithms for robotic management in MANETs for mobile agents with reliable communication is difficult due to distributed calculation module in many robots (Yong et al., 2009)]. So, it is better if the mobile agents can form a mobile ad hoc network (MANET) and make their motion plans considering the dynamic changed topology. Performance of MANET Routing Protocols in Robotic Management MANET protocols can be designed in a better way to work in robotic management (Javier et al., 2011) for the difficulties under practical situations like short-range wireless network, interference in channel, low-cost equipment, limited range to communicate with only neighbouring nodes (Movahedi et al., 2014). Secluded robot control framework has been implemented for different purposes, for example, investigation and checking. The up and coming age of remote robot control framework is made a request to be used effectively and advantageously by means of Internet convention (IP) based system. In any case, a basic issue about security of the IP based framework is organize assaults, which is should be counteracted. Tian et al. (2016) propose an iOS (Apple Mobile Operating System) based application with SSH (Secure Shell) convention to acknowledge tele operation with a snake-like robot by means of Wi-Fi organization. The framework is separated into three modules, movement module, middleware module and tele operation module. Simulation was carried out to demonstrate the legitimacy of the framework. Currently, research on multi-robot framework is getting a lot of consideration. Multi-robot framework has many focal points over a solitary robot in specific missions, for example, lessening multifaceted nature, accessibility of repetition, and reconfiguration abilities. Utilizing coordination plot in various portable robots enables them to finish assignments with higher many-sided quality. The capacity of every robot does not need to be exceptionally entire, since every robot can concentrate on a specific assignment. In this way, now and again, numerous robots cooperating to finish a specific mission can be generally less expensive and simpler to execute than a solitary robot. One of the fundamental worries in the dialog of multi-robot framework is arrangement control. Having a gathering of robots moving in development enables client to control the whole gathering of robots without the need to indicate the orders for every robot. This is extremely valuable in numerous real-world applications, for example, inquiry and protect missions, reconnaissance, security watches, military missions, and transportation. A few methodologies have been proposed to take care of the development control issue: conduct based
Mobile Security in Low-Income Households' Businesses: A Measure of Financial Inclusion
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Identifying Security Requirements Using the Security Quality Requirements Engineering (SQUARE) Method
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