RESEARCH ARTICLE OPEN ACCESS

A Review on Improving Quality of Service in Wireless Sensor Networks

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ABSTRACT

In the evolving technologies, Wireless Sensor Networks has exposed its immense potential in different fields of modern applications. For the needs of successful protection mechanisms, wireless sensor networks continue to develop. The collection of wireless sensor present in a network consists of thousand and thousand of sensor nodes. A Sensor node has many features such as limited use of resources, capacity of communication, retention capability, sensing capacity etc. These sensor nodes are used for various methods like event detection, recognition, sensing locally, endless sensing, and actuator controlling. Though Wireless sensor networks having adequate potential, it has some drawbacks in terms of hardware and architectural design. We investigate protection attacks in wireless sensor networks in this paper. In recent days, wireless communications and electronics have become so advanced that they are on their way to creating multipurpose, low-power, low-cost, and more significantly, low-power and small-size sensor nodes. These nodes have such properties as to be able to communicate within short distances. When machine vision for healthcare progresses, demand for intelligent control is growing. Automation in recognizing a patient's routine or abnormal workouts can enhance health outcomes, and can also minimize manual monitoring e orts. Computer-vision is the advanced and creative medicinal services sector, and smart monitoring systems are increasingly becoming part of the healthcare system. Mechanization in determining a patient's ordinary or irregular behaviors can enhance the outcomes for well-being and can also minimize manual check-up and tracking efforts.

I. INTRODUCTION

In harsh environment, a large number of sensor nodes which are dispersed form a Wireless Sensor Network. Like every other network, this network is vulnerable to various security issues. This makes it crucial to recognize the wireless sensor network security issues [1]. There are so many mechanisms that are built to offer sensor network or node protection. One significant question in wireless security network is trust management [2]. Wireless sensor systems are used for safety applications with various functionalities. In the beginning, it checks whether the target is present or not based on that parameters are evaluated. The goal can be tracked to various ends [3]. The attempts to identify, predict, and monitor may or may not be collaborative. The second role is to coordinate and bring information on wireless networking, and it checks outs the various problems which are related to estimation and detection. The networks which are wireless cannot work separately because the wired connection are required to transfer information or data over the network [4].

Most applications on the sensor network today and a range of attacks are possible in WSN, including Hello flood, Wormhole, Sybil, etc. Wireless Sensor Network is a collection of low cost, autonomous sensor nodes [5]. The sensor nodes are equipped with different types of sensors such as environment, optimal, chemical, thermal, acoustic, heat sensors that collect information from different nodes and work together to forward sensed data for further processing to base stations [6]. Wireless Sensor Network are designed to solves various problems such as localization, clustering, routing, fault detection, and protection due to the complexity each application must have its unique characteristics and specifications [7]. Much research is engaged in developing novel design paradigms to tackle problems in existing network structures that are influenced by the biological system's inherently appealing features [8].

II. LITERATURE SURVEY

Intrusion is an unwanted active sequence of similar events that refused the services and attempted to cause harm such as failure to respond to the program, and access unauthorized data or manipulate data. In other words, an assault defines intrusions as being the same [9]. Intrusion Detection System (IDS) scrutinizes to retrieve network information and any other mishandlings [10]. Intrusion-detection system (IDS) surveillance networks are used to track (internal or external) cyber-attacks. General IDS concept is about network intrusions but, for WSN, physical harm to sensor devices can be added. Identifying damage to the sensor is critical to server failure [11]. During extensive attacks, distributed denial of service traffic also generates intense congestion on the Internet that disturbs the normal transmission between all Internet users [12]. An analytical model is developed to estimate the health of the forwarding behavior of a node to explain this stealthy attack [13]. The attacker uses a high-powered transmitter to trick a large area

of nodes into believing they are neighbors of the transmitting node. Unless the attacker intentionally transmits a false superior route to the base station, several of these nodes will prefer to communicate with the attacking node given the fact that many are simply out of radio range [14].

Various researchers use many image processing techniques to develop manual techniques for accurate and consistent decision-making, but deep learning offers more flexibility in the tasks of precision farming [15]. As a subset of machine learning, deep learning is gradually adding complexity to the platform. The principal benefit of deep learning technology is the automated extraction of features. Deep learning models can compose features of a lower level to shape features of a higher level. Deep learning can precisely and rapidly solve more complicated and bigger problems [16-20]. Deep learning may involve several different elements, such as pooling layers, convolutions, completely linked layers, activation functions, and so on. Hierarchical structure, great learning capability, pace are some of the reasons why it's so common [21-25]. The deep learning model structure performs classification, prediction, and many other tasks with high versatility that enables them to take on many complex problems [26].

Deep learning is commonly used for image processing and video processing raster-based data but other deep learning applications use a range of data such as audio data, natural languages, and many more[27-30]. Application of weather data is simple with profound learning, and the application of population data can also use deep learning models [31-35]. During the training process, profound learning models will learn and locate important features. This makes them take a long time during training but testing is very quick than all other conventional approaches to machine learning [36-40].

Much research has been conducted in areas such as crop type classification, weed identification, plan recognition, land cover classification, fruit counting, yield prediction crop quality, disease detection, etc [41-45]. An Artificial Neural Network (ANN) is an information modelling system inspired by biological nervous systems such as the information processing on the hippocampus, etc. This is made up of a large number of highly interconnected devices called neurons [46-50]. Deep learning networks are, by their size, distinct from traditional single-layer neural networks[51-54]. The depth is the number of layers through which data is passed[55-58]. The network which has more number of hidden layers is known as Deep Neural Network [58-62].

III. CONCLUSION

The hidden layers are present than regular neural networks in the DNN, so it is difficult to train such a neural networks. Train Artificial Neural Network using the Learning algorithms and Activation function. ReLu is the presently used technique distinct to Tanh and Sigmoid it doesn't deal with the issue of gradient vanishing. But it can face the dead neuron issue that can be solved with the use of Leaky ReLu. But using the activation function depends on the various issues involved. When classification issues have occurred, then sigmoid has more effectively and faster overcome this classification problem than ReLU. The type of problem also needs to be verified in terms of a selection of algorithms. Unless the problem can be split into the same small problem then the Greedy algorithm can solve that problem, but it does not have a guaranteed optimized result for each problem. There are two algorithms which improve neural networks efficiency are Dropout and Greedy algorithms but the Dropout algorithm can solve the problem of over fitting. In this paper, we have discussed about various wireless sensor networks by using deep learning such as Agriculture, Security, Intrusion Detection technique etc.

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