



A PROPOSAL FOR ADVANCED SECURITY SYSTEM BASED ON EMPIRICAL TECHNOLOGIES: CLOUD COMPUTING, MACHINE LEARNING AND THE INTERNET OF THINGS

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Abstract

Emerging technology takes a very large place in the technology database. As a mixture of two or more methods gives greater suitability for the work of any real complex problem, embedded systems prove to be very efficient and very effective for running in any complex tasks. The large-scale selection and manipulation of empirical technologies prove positive for future development to run life smoothly. Given the large number of applications, intellectual comics is eager to design this paper to create images related to a mixture of several technologies. Cloud computing, machine learning, and the Internet of Things are working together to create a very special model for many coming challenging task. Cloud proved to be an assurance, with the absolute percentage of availability of the resources provided based on demand and satisfaction criteria. A survey provides an inspiration to show a model that proposes a mixture of these three mentioned technologies. Through which, each user will be assured to complete their task using the features of the CMI proposed system. This work will allow researchers to make appropriate technology decisions to run user applications.

2010 Mathematics Subject Classification: 68P25, 68Q85, 68Q01, 81P94.

Keywords: Cloud Computing; Machine Learning; Internet of Things.

Received May 20, 2020; Accepted July 31, 2020

I. Introduction

Cloud computing provide the services based the user's requirement. Through internet, it facilitates the storage and computing power for the execution of the tasks very well in the view of technology enhancement. Multiple users can work simultaneously over the internet through cloud servers from different location. Now a day's various organizations have created their own data centers for the convenience to the user to achieve the required results. Peoples are getting more expertise to make it very skillful. Cloud performs its fruitfulness in many domains also. Not only for IT industries, has it performed well for energy plants, medical organizations, education field and many more. Cloud gets more attention due to its beneficial services, and all services provided in a very efficient and secure way to the user. Many services such as required software platform, security, minimum execution time and cost, more bandwidth, easy operations e.t.c. the origin of this technology comes in a form of cloud where many things get settled in a systematic way by applying very domain for needy ones.

As clouds have many definitions, first cloud was introduced with the name i.e. Compaq internal document. Many algorithms work on certain patterns i.e. time and space are shared, now days, Algorithm works on resource sharing, features sharing. Cloud computing includes many processes and patterns in it and provide the process or services according to the demand. A process i.e. virtualization works with sharing the data within the cloud for implementing the application software's. It provides a virtual environment among the cloud properties in the form of software, hardware, others. As cloud has many domains, scheduling is also one from them. Scheduling map the services to the coming request from the user based on the filled agreement signed by the user in the view of service provider. Determination for the flow of tasks can be for a particular task. It took the lead in cloud computing and published more research on it by introducing several optimized algorithms.

A guaranteed and algorithmically proven result or decision can only be generated through machine learning methods. Based on some features or past experiences, the machine will be able to identify things and provide relevant results. Mainly focused on mathematical equations have been used

to show the variation between different values. Learning can be of different types. Some are useful for optimizing things and some for generating repeated results for a larger problem in which the same task or decision is implemented with the same method. Decoding, expressions, beliefs, functions are possible to be compiled through embedded systems. As we follow the tag line "Old is Gold" everywhere. Therefore, it has to be written here that it is also being implemented in technology. To drive these soft computing technologies, all new embedded or customized things are in use only through the presence of traditional systems. The root of the system can only begin with traditional things.

A broad area covered by learning techniques that includes the basics: supervision, unheard and re- enforcement. All learning begins with its basic definition. Namely, supervised learning trains the system with specified rules and regulation while the unproven method trains the machine as it produces the results based on some previous experience. And finally by looking at the function of the machine regularly, the Re-Enforcement Learning System learns the steps, and is able to produce results based on observation.

Internet of Things recommends working smartly using smart gadgets, designed in conjunction with multiple universal connections with multiple technologies. Communication capacity is enhanced by using reliable and nurturing techniques. Smart devices are specifically designed to understand, absorb and distribute things on the internet wherever needed. It started in 1999 with the concept of supply chain management. It automatically understands machine objects and performs without the intervention of humans.

As IoT performs well today, organizations are eager to maintain its enthusiasm by achieving its true value. Organizations like the healthcare, transportation, shopping sites, advertising sites and education systems are very keen to use it and want to upgrade this technology by providing assignments and notes to their people.

Section 1 is explaining the importance of the commencement technologies. Section 2 explains the existing research. Section 3 shows the architecture of proposed model. Section 4 concludes the paper.

II. Related Work

In order to create the availability and reliability of resources, a resource determination algorithm has been proposed by the author. A hybrid solution using chemical reaction with ant colony swarm intelligence technique has been implemented. Cloud toolkit used to generate fruitful results for incoming applications and requests from users [1].

The highest traffic path has been found to move all traffic to produce greater results in a finite time period. Writer scheduled Directed A-Cyclic Graphs to run the proposed scheduling algorithm. One end is initially drawn as a path with some configured value through which a table can get in nature to move congestion on it [2].

An algorithm is proposed by separating it into three phases: clustering, converting, and assignment. Following the proposed algorithm, the travelling salesmen problem algorithm follows the instructions from the processed elements. A cloudlet or task mapped with an optimized path generated through TSP and works accordingly without any changes. The result shocks the data that is more optimized and refined after processing the proposed algorithm [3].

A new algorithm has been proposed through which tasks run only on Idle or available machines and achieve a minimum schedule length. By calculating the means between transmit or active nodes in a large network, a long repeat algorithm is implemented to achieve high performance scheduling. According to the algorithm, it works in two steps which are to first set a priority for the main tasks and then search for ideal machines to run those priority tasks. Through this communication the overhead is also minimized and the machine is able to operate smoothly and effectively when applied to actual requests [4].

As the basic definition of machine learning is that it mimics human capabilities and is performed by the machine itself, the authors also highlight this tag line. As machine learning transforms its dimensions into different domains, it also leads to healthcare industries. It covers the high dimensional field with highlighting things by making fundamental scientific notable contributions to open fields [5].

The author teaches very well by including all aspects related to machine learning. This is well accomplished from the beginning of learning between active nodes, until it encounters a large complex network. Self-organizing, symbolic recognition, the ability to generate knowledge from precious data, machine learning has made data very valuable by analyzing things that benefit people and derive their own rules. Whether the data can be mapped or cannot match others, the machine is also capable of performing tasks for those people, as it has the ability to mine that data or history in many ways that any line can find [6].

Wireless sensor network adopts machine learning techniques. Machine learning techniques maintained a core place in view of development, and proved to work efficiently with large networks or nodes, wireless networks for wireless functions also compile through it. A very effective literature has been prepared by the author to understand the need for machine learning in wireless networks. The paper suggests that once a model is designed for a particular problem, it does not need to be redesigned for the same type of requests [7].

Author has shown various facts about machine learning as to why and when these empirical techniques are useful for our lives and how they work for normal human life. According to the theory, machine learning provides an algorithmic solution using mathematics. In the initial stage, the knowledge processed as an input and then the learning system will show their proficiency by creating a prototype model with the help of the previous version of the results relevant to them. And then by applying the appropriate test and decision rules to the filtered data, the result will be final [8].

The author shows whatever benefit he is receiving from IoT through values. The author tells facts about IoT that it helps to make life very soft, easy, automatic and smart. Applications run in various domains through IoT such as electronics, smart devices consume more energy but do work very well. So some issues are also presented in the paper. Any new and innovative technology always comes with its pros and cons. IoT takes people one step further by combining a lot of technology to design comfortable things. Now life is going smoothly with various campuses and challenging

tasks [9].

IoT involves the interaction between the machine and any other object. Since there can be huge amounts of data in different directions, IoT makes the generated data useful for performing any action. The things produced by this can be completed correctly and also controlled. Through this, life becomes very soft and easy to conduct things in daily life. Today, all are covered through electricity, so why not IoT is used in all aspects related to real life when every aspect has to run with current. Now IoT is becoming the core of all technology to build smart cities and equipment's [10].

The author provokes about various routes that can be run well through the cream characteristics of IoT. Things get better by increasing qualitative wages; everyone wants to connect with the smart world. The main concern is energy consumption. The technical matter should be pursued taking care of all the issues arising during the implementation of smart things. In the field of IoT-related research, the sparkling spectrum must scale with multiple cores to overcome the sensitive state created through the system. The final writing ended the paper by writing that no one could predict how life would progress in the later days, but until one could make a good change, everyone should cooperate with others and live life accordingly [11].

Ubiquitous computing allows many color technologies to modernize life through many useful technologies such as cloud emerging IoT with a large number of connections and indicators. Through developed smart devices, communication creates vibrations to blend the scent of sensation around the world. With more applications and instructions spanning a wider range of internet from www to web 2 and 3, the demand for services increases considerably day by day. The author concludes the paper in detail on future aspects related to large network functions with cloud cemented IoT in various uses [12].

The paper proposed the scenario to develop intelligent transportation system to make the city smart. IoT traces its quality to develop automatic and soft things used for all. Machine learning techniques have then come into the picture to augment the developed IoT devices. From making the devices more and more self-service workers, the learning system works well until complete learning of the device [13].

A survey has been prepared by the author in collaboration with these three technologies. To make the city smart, a review table has been shown to consider several factors such as predicting traffic in the wake of smart traffic, increasing the data abbreviation given the smart healthcare system, discrepancies in power datasets in view of smart environments looking forecast, smart weather forecasting etc. A very elegantly described paper has been produced by respected authors, which is very easy to explain to anyone if they are not aware of the deep things related to learning smartly [14].

The author focuses on the economic, commercial and social implications for life. Due to the large number of connections through multi-level resources, cyber ethics are inaccurately involved. Using traditional cryptographic techniques, security challenges have been taken into consideration. Heartbeat detectors, various sensors, equipment everywhere, retail, production and generations etc. should all hold the definition to attract attention in order to achieve growth with covering all the useful things related to daily life. Paper has been shown the major characteristics also to take the lighting on their proposed paper [15].

Instead of using traditional systems, advancement needs to improve its own using the machine learning concept in sensor networks. The published paper addressed various issues and challenges in the paper for the achievement of advancement. Dynamic behavior has been considered an important point for designing paper, keeping it safe and secure from external and internal as well as blockages. Many supervised algorithms are graphical such as node localization in sensor networks in K-nearest neighbor, decision trees, neural networks, support of vector machines, clustering, data segregation and resource management etc. Various aspects, which can improve themselves through machine learning, have been successfully completed [16].

In the conference paper, the fog computing based security algorithm is implemented. This solved the security challenges faced at IoT. The proposed algorithm takes advantage of things related to virtual private networks so that the entire channel media can be secured to communicate [17].

The sensor cloud architecture is designed to present the proposed paper on the multilayer client server model. It is this text that without the need for

physical and virtual examples, the paper is able to protect the factors that concern the quality or authenticity of the algorithm. To create the line between real and virtual sensors, the sensor cloud security system has proved to be very good by achieving implementation from the reference paper and resulting fruitful results [18].

The proposed paper shows a very good idea which is the future of the Internet. The paper used a mixture of two empirical techniques that are cloud and IoT. It should be able to be used to create a process for everyone with a large number of applications. The paper about Cloud IoT tries to understand one. An application-based case scenario is illustrated for open and commercial projects for future enhancements by considering problems, applications, challenges, knowledge and analysis [19].

In order to benefit people, the proposal is accepted through a designed model of the interconnectivity of objects through ongoing data. Gap has been established by the author regarding data storage in a highly secure service provided through cloud service plans, which must be processed with the help of a unique key [20].

Automated landing devices by vision based algorithm mapping have been proposed in the paper. This algorithm will help to identify objects with different Lightning systems. The entire system is designed to work based on image classification techniques. Shape and color recognition based schemes have been analyzed for proposed steps such as image capturing, then identifying and then analyzing [21].

To solve for real-world applications, the aerial surveillance concept has been designed with little implementation. It is capable of carrying out such important tasks as home security, unwanted sensing etc. It removes obstacles installed on the ground as it is a flying device. Due to multiple battery limitations, many flights can run successfully for only 10 minutes. When a low battery is detected in a flying device, the paper eliminates these battery limitations by initiating automatic battery replacement [22].

Real conditions explain the paradigm of smart technologies for future and present collaboration. The idea is to build smart transport, buildings, homes and the city. It is useful for tracking things and allows support for

those things from external threats. The author portrays the challenges involved in the form of data privacy and many more, so many of the written or care written on paper makes imaginary things into reality [23].

The idea is to suggest more use of data as it can squeeze its value for any acting function. The paper proposed a concept of unique keys by storing data as well as in a high cloud centric database. It is also capable of providing log interactions and multiple types of extensions between users to access video and text. The main motive is to design the paper i.e. high digital representation with high speed large wireless network [24].

The Cloud and IoT combo has shown its value in letting people know that more and more people can get advanced or modern models to live their lives. It becomes the promoter for advance use for any normal daily life activity. A survey indicates which platforms are already implemented or are currently being used to live life smoothly. Wireless or innovation world comes into human life to perform any task. Influenced by IoT, the author designed this paper to be user-centric. Each innovation goes into implementation, for the benefit of users only. This expands the cloud's range for greater use of IoT applications. While designing this paper several things are in mind such as storage capacity, networking, computing techniques, etc [25].

III. Proposed Model

The associations of the three technologies mentioned form a model namely the CMI shown by figure 1. Creating the necessary tools is important for cloud developers. Machine learning is capable of creating tools that can automatically take action by sensing nature from experiences and observations. IoT works to make the world smart. An idea is introduced by presenting a diagram of a smart drone. It will be able to identify any manipulating activity and create a report to save in the clouds.

Objective:

In the previous instructional, the research paper follows several issues and challenges and attempts to make the system error free and intelligent. With more publications, many possibilities and scope can be found to expand

the totality. With this drone, the suspect could consider saving the area by an actual obstacle. Since it will be smart, the ability to learn will make sense by itself to detect the object and send its information to the cloud for further actions. This can control many other conditions and will be able to provide solutions, which are not yet in focus.

By introducing the proposed model, the author tries to meet the untouched parameters by providing some value after implementation with the help of various active tools.

Proposed Algorithm:

The smart drone will start from its base station and will be at every location where a bombard of negative things can be created at random. After an object is in the picture, the drone will send the record to the cloud data saving center. The drone will stay as long as its energy will stop and work to catch the obstacle. Once the energy level is indicated to be low, it will move towards its starting location and automatically set to its charger point.

Algorithm processed by following steps:

Pseudo code - Takeoff from base station from base station

C1 Ideal State- Stand on Base Station

C2 Check energy level

C3 if energy level adequate

C4 then ready to takeoff

C5 else waiting for flying time schedule.

C6 Or accept command through cloud server also.

Pseudo code-flying mode

C1 initial condition -In flying mode

C2 Drone continually flying in a defined range,

C3 and sense the objects during flying

C4 If some objects are suspected as compare to normal situation

C5 Then drone activate its emergency mode itself.

C6 Click image and send to cloud server and activate base station alarm.

C7 If found energy level low

C8 Then return back towards base station for charging.

Pseudo code-Landing to base station

C1 initial stage flying mode

C2 Find landing space-land on base station automatically Start charging mode automatically

C3 Information sends to server.

C4 If charging is completed, and then information sends to server and fly or check its flying-time schedule or wait for command

Pseudo code-Ideal state of drone

C1 Initial state stands on base station

C2 check energy level

C3 if energy level full sends information to cloud server

C4 Wait until flying time schedule not permitted.

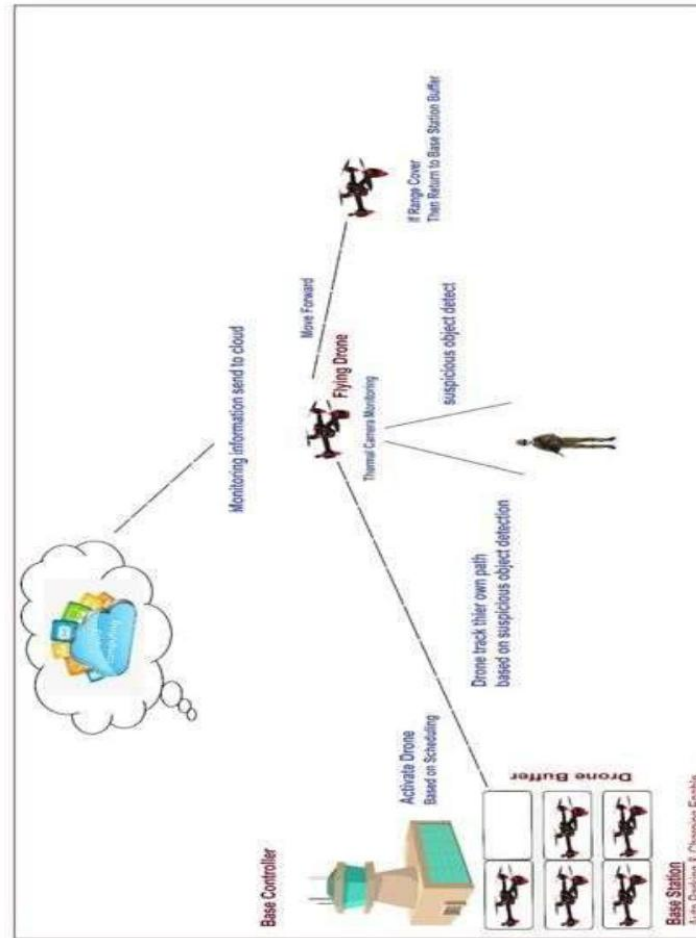


Figure 1. Proposed Smart Drone Model.

To design the drone initially, basic drone building tricks have to be set, and then according to the automated life-saving perspective, the system would like to use the proposed drone without human touch. Empirical technologies now enable devices, such as the endless participation of innovation, through which border boundaries can be successfully removed.

Cloud computing complements user-on-demand service delivery through large connections to nodes connected by the Internet. The cloud is able to ensure a number of flashy keywords such as storing and organizing data through on-line connections that satisfy the need for physical devices. Large-scale electronic networks, capable of transferring useful data based on

knowledge and daily routines, are enabled only through IoT techniques. Many types of objects are capable of connecting with advancement for essential things. Machine learning tells itself to do things. Machine learning plays a very good role by assessing the response to important requests in a very effective way.

The system that the author wants to design can give rise to a generation of widespread IoT. There are also development needs for intelligent devices, which should be able to run smart applications with resource allocation, network communication without any hindrance. Furthermore as the number of applications grows, the cloud will keep all the data in its storage, and coupled with the instructions provided through smart technologies. The expedient tool has allowed exposure to remotely accessed devices measuring data available worldwide.

IV. Applications of Smart Drone

Over the years, drones have replaced men. Because it can occupy things where men cannot reach or are not able to track efficiently. Through BI intelligence estimates, its central or main function becomes that of government as well as private bodies to speed up delivery by scanning tracks and suspicious things. It also helps in reducing the expenses of the organization in terms of manpower and workload and improves accuracy and productivity.

The smart idea of designing this paper is that the drone is usually controlled via a remote or mobile application, here once the drone will start, remotely or no touch is required. The proposed drone makes the least possible effort and after initialization, the proposed drone will configure all the way and understand the object and learn the steps to run automatically. This is the main reason why everyone around the world is eager to develop, design and use it.

V. Conclusion and Future Scope

A lot of applications are in demand to achieve a beneficial segment towards technology innovation. Taking care of this, a review paper has been

prepared considering the issue of multi-movable application with the newly proposed CMI model. The CMI model will certainly be found in nature with the sparking of the mixture of empirical technologies described above. It will prove itself to make things smart and useful to all. Nowadays due to the greater availability of smart hardware, smart drones or devices with a wide variety of applications are fast becoming a major part of one's life. The paragraph focuses on saving one's life by introducing the concept of self-automated smart drones. Through this, unhappy situations can be captured and will be able to take timely precautions for them. Ensure that proposed technology will be able to train situations, equipment and techniques in the smart world.

The main motive for designing paper to make things highlighted with the fruits of empirical technologies. All things around the world are eager to be advanced at any level. As smart devices are capable of designing different methods by Bayesian or other methods with more than two classifications or clustering method, many application area is empty to achieve smartness. Categories like smart parking system, education system, alarm system etc. can make life good by taking into account any unnatural event like accident, financial outlook, human safety etc.

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