NEXT-GENERATION ARTIFICIAL INTELLIGENCE MONITORING MODEL FOR OPTIMIZING THE END NODES IN EDGE COMPUTING NETWORKS

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Abstract

An edge computing networks is interconnected and distributed collection of artificial intelligence computing in a specific area. Edge computing networks are complex consisting of geographically distributed artificial intelligence computing and their terminals, united in a single system. According to geographical distribution, edge computing networks are divided into local, city, corporate, global, etc. The equipment and data transmission channels associated with peripherals like Interface cards and devices, Routers and Switching Devices. There are some functional software and hardware components of a edge computing networks available. A system of software and hardware components distributed in space, connected by artificial intelligence computing communication lines. A distinction can be made between hardware and communication devices. Software components include operating systems and network applications. In this paper a next generation artificial intelligence model was proposed for optimize the various performance parameters in edge computing networks. The proposed model monitors the simplest occurrence of contacts between two artificial intelligence computing. The central server considers as a initial node and another node is an edge node of the network. In simple case, the contacts of the system can be felt using the same instructions used to communicate with the external system.

Keywords:

Artificial intelligence, optimization, edge computing, Interface cards, Routers, Switching Devices

1. INTRODUCTION

Currently, the network uses artificial intelligence computing of different types and classes with different characteristics. It is the backbone of any edge computing networks. Artificial intelligence computing and their characteristics determine the capabilities of an edge computing networks [1]. But recently, communication devices (cable systems, repeaters, bridges, routers, etc.) have started to play an equally important role. Some of these devices, given their complexity, price and other characteristics, can be called artificial intelligence computing that solve very specific tasks to ensure the operation of networks [2]. For the efficient operation of networks there is some special network operating systems (network operating systems) configurations are available [3]. This was an individual operating systems are designed to solve special tasks of managing the operation of a network of artificial intelligence computing. Network operating systems are installed on dedicated artificial intelligence computing [4]. Network applications are application software systems that extend the capabilities of network operating systems [5]. These include mailers, teamwork systems, network databases, etc. As network operating systems evolve, some network application functions become common operating system functions [6].

Connecting a PC to a network requires an interface device called a network adapter, interface, module or card. It fits into the socket on the motherboard [10].

These types of networks are complex and very expensive because the operating systems of the individual artificial intelligence computing are built around shared access to the network's common memory field. In the conditions of mixed networks under centralized control, the solution of tasks with high priority and, as a rule, associated with the processing of large amounts of information; According to software compatibility, networks are homogeneous or homogenous (consisting of software compatible artificial intelligence computing) and heterogeneous or heterogeneous (if the artificial intelligence computing included in the network are software incompatible). Even with a cursory consideration of networking, it is clear that a edge computing networks is a complex of interconnected and integrated functional software and hardware components. Studying a network as a whole assumes knowledge of its principles of operation.

2. LITERATURE REVIEW

The entire complexity of the network's software and hardware devices can be described by a multi-layer model. At the heart of any network is a hardware layer of standardized computing platforms. Currently, artificial intelligence computing of various classes is widely and successfully used in networks - from personal artificial intelligence computing to mainframes and super artificial intelligence computing [1]. The set of artificial intelligence computing in the network must correspond to the set of different tasks solved by the network. The second layer is the communication device. Although artificial intelligence computing is central to data processing in networks, communication devices have recently played an equally important role. Cabling systems, repeaters, bridges, switches, routers, and modular hubs have moved from ancillary network components to become main stream with artificial intelligence computing and system software based on their impact on network performance and cost [2]. Today, a communication device can be a complex specialized heterogeneous application that needs to be configured, optimized and managed. Studying the principles of operation of communication equipment requires familiarity with the numerous protocols used in local and global networks [3].

The third layer that makes up the network's software platform is operating systems (OS). Concepts of the performance of the entire network and the management of local and distributed resources form the basis of the network operating system [6]. When designing a network, it is important to consider how easily a given operating system can communicate with other network operating systems, how it provides security and data protection,

to what extent it allows the number of users to increase, and whether it can be transferred to an organization [7]. Different types of artificial intelligence computing, and many other considerations. The highest layer of networking tools are various network applications such as network databases, mail systems, archiving tools, collaboration automation systems, and more [8]. It is important to understand the range of capabilities that applications provide to different application areas and know how. They are compatible with other network applications and operating systems [9].

3. PROPOSED MODEL

In the simplest case, the communication of artificial intelligence computing can be realized using the same mechanisms used to communicate with artificial intelligence computing devices, for example, through a serial RS-232C interface. Unlike the communication of a artificial intelligence computing with a peripheral device, when the program works, as a rule, only from one side - from the artificial intelligence computing side, in this case there is a communication between two programs running on each of the artificial intelligence computing. Messages may contain information data (for example, the contents of a file) in addition to commands to perform certain actions. In the proposed model, the artificial intelligence handled all devices connected to a network can be divided into three functional groups shown in Fig.1:

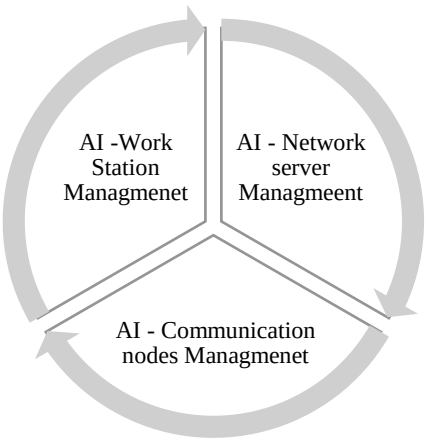

Fig.1. Proposed model device handling structure

3.1 ARTIFICIAL INTELLIGENCE BASED WORK STATION MANAGEMENT

A workstation is a personal artificial intelligence computing connected to a network on which a network user performs his work. Each workstation processes its own local files and uses its own operating system. But at the same time, network resources are available to the user. A program running on one artificial intelligence computing cannot directly access the resources of another artificial intelligence computing - its disks, files, printer. She can only listen to the program running on the artificial intelligence computing that owns these resources. These requests are expressed as messages sent through communication channels between artificial intelligence computing.

3.2 ARTIFICIAL INTELLIGENCE BASED NETWORK SERVER MANAGEMENT

A network server is a artificial intelligence computing connected to a network and provides certain services to network users, for example, storing public data, printing jobs, processing queries to a DBMS, processing jobs remotely, etc. According to the functions performed, the following groups of servers can be distinguished. File server, file server - a artificial intelligence computing that stores data of network users and provides access to this data for users. Generally, this artificial intelligence computing has a large amount of disk space. A file server provides concurrent user access to shared data. A file server performs the following functions shown in Fig.2.

- Edge nodes Data storage
- Edge nodes Data archiving
- Edge nodes Data transfer

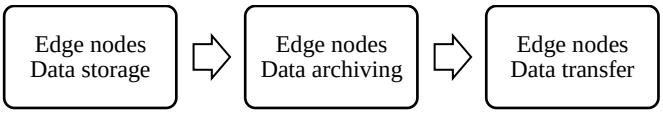

Fig.2. Proposed performance of the file server

A artificial intelligence computing that performs functions such as storing, processing and managing database files (DB). A database server performs the following functions shown in Fig.3:

- Maintain databases; maintain their integrity, completeness, relevance;
- Receiving and processing queries to databases, as well as sending processing results to the workstation;
- Integration of data changes made by different users;
- Support for distributed databases, communicating with other database servers located elsewhere.

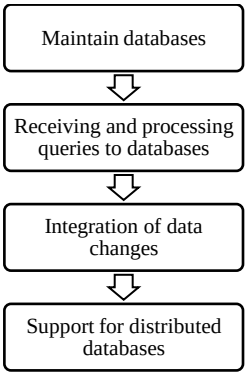

Fig.3: Proposed performance of the data server

A communications server is a device or artificial intelligence computing that provides transparent access to its serial I/O ports to users on a local area network. Using a communications server, you can create a shared modem by connecting to one of the server ports. A user connected to a communications server can work with such a modem as if the modem were directly connected to a workstation

An Access Server is a dedicated artificial intelligence computing that allows remote job processing. Programs launched from a remote workstation running on this server. Commands

entered by the user from the keyboard are received from the remote workstation and the results of the task are returned. A device or artificial intelligence computing that sends and receives fax messages to local network users. A backup server is a device or artificial intelligence computing that solves the problem of creating, storing, and restoring copies of data on file servers and workstations. One of the network file servers can be used as such server.

4. RESULTS AND DISCUSSION

The performance parameters of the existing Distributed machine learning model (DMLM), Artificial Intelligence and Edge Computing (AIEC), Secured Multi-Access Edge Computing (SMEC) and integrated structured cabling system (ISCS) are compared with the proposed artificial intelligence optimizing model (AIOM).

4.1 PERFORMANCE OF THE OPTIMIZATION SOFTWARE

There are problems associated with operating systems and applications. Programming for distributed systems is based on programming for centralized systems. Therefore, a network operating system performs all the functions of managing the local resources of a artificial intelligence computing, and, in addition, it solves many problems in providing network services. The development of network applications is complicated by the need to organize the collective work of their components that run on various machines. It is an important concern to ensure software compliance. The comparison of performance of the optimization software was demonstrate the Fig.4.

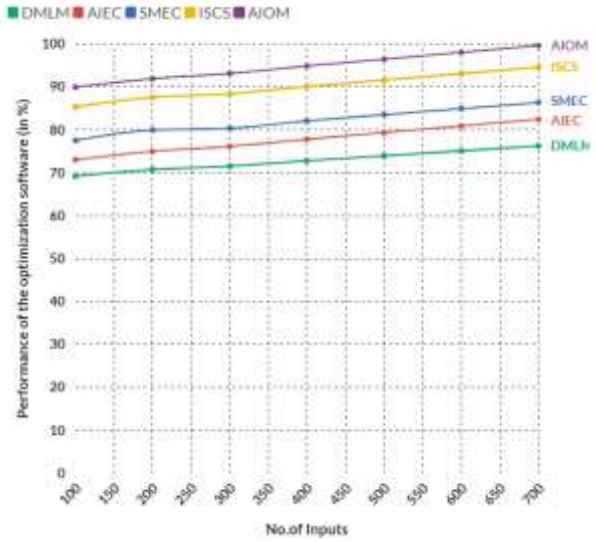

Fig.4. Results of performance of the optimization software

4.2 CONFIRMATION OF RELIABILITY

There are many problems with transporting news through communication channels between artificial intelligence computing. The main tasks here are the confirmation of reliability (so that the abducted data does not lose or decay) and performance (data transfer with acceptable delays). In the structure of the total costs for the edge computing networks, the costs of solving traffic problems create a significant portion, while these problems are not completely in centralized systems. The comparison of confirmation of reliability was demonstrate the Fig.5.

4.3 NETWORK SECURITY MANAGEMENT

These are safety -related problems, which are more difficult to solve on the edge computing networks than the centralized system. In some cases, it is advisable to refuse to use the network as a whole when security is particularly important. There are many more advantages and disadvantages in the use of networks, but the main source of their performance is an undeniable fact of their widespread distribution. The comparison of network security management was demonstrated the Fig.6.

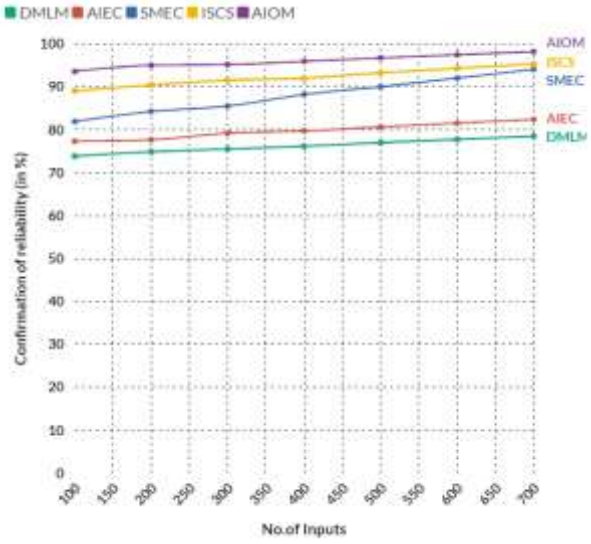

Fig.5. Results of confirmation of reliability

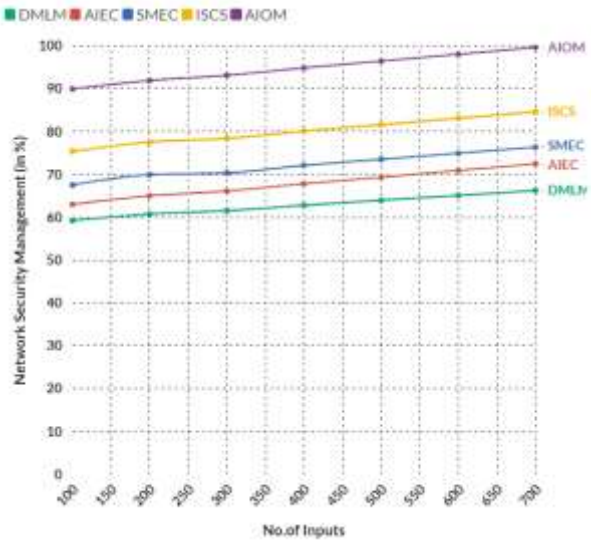

Fig.6. Results of network security management

It is difficult to find any large company that does not have at least one section network of personal artificial intelligence

computing; Large networks appear with hundreds of workstations and dozens of servers; Some large companies and companies receive private global networks that combine their branches for thousands of kilometers. In each particular case, there were reasons for creating a network, but the general statement is true: there is still something in these networks.

4.4 HANDLING OF EDGE CONSTRUCTION PROBLEMS

The most convenient and effective feature of the Networks Client program is the ability to distinguish from the request for the local file to the remote file. If the client program is able to do this, you should not worry about which file (local or remote) in the applications, the client program itself recognizes itself and requested the reed machine. So the name is often used for the client side of the Network OS. Sometimes authentication functions are divided into a separate software block; in this case, the entire client part is called steering, but only this volume. The comparison of edge construction problems was demonstrated the Fig.7.

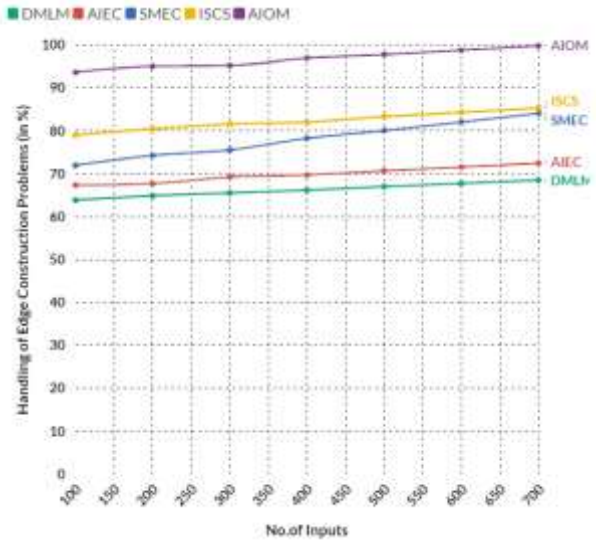

Fig.7. Results of edge construction problems

5. CONCLUSION

The choice of the appropriate data transfer rate, the method of sync of communication lines, the receiver and transmitter - some bit of degeneration of the abducted data is possible. A receipt signal this confirms the exact nature of the data reception and is sent to the sender from the recipient. The performance parameters of the existing Distributed machine learning model (DMLM), Artificial Intelligence and Edge Computing (AIEC), Secured Multi-Access Edge Computing (SMEC) and integrated structured cabling system (ISCS) are compared with the proposed artificial intelligence optimizing model (AIOM). To improve the reliability of data transfer between artificial intelligence computing, a standard technique is often used - the number sends it through the communications lines of the number after each byte or some bytes. Often this included as a mandatory element in the data transfer protocol.

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