PERFORMANCE ENHANCMENT OF IOT IN THE INDUSTRIAL AND HOME AUTOMATION USING EDGE DETECTION

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ABSTRACT

The research has focused on performance enhancement in IOT based system. Internet of Things(IOT) technology and its applicability in different sectors has been explained in beginning. It has been adopting in all most sectors such as Home Automation, Industrial Automation, Health Care Sector etc. This technology is improving the performance of many devices such as home appliances, industrial devices, healthcare instruments etc. Using IOT based devices, we can save our time effort and energy. There are several advantages and benefits of IOT based devices which are also discussed in this chapter. In addition to this, this chapter explains applicability of IOT based devices in multiple sectors. As IOT based devices are very useful and use of these devices are increasing day to day, the threats to its security is also increasing parallel. This research paper has explained the existing research in field of IOT along with problem formulation. In order to resolve the performance issues detection's have been processed with edge detection mechanism. Proposed mechanism would result in quick decision making and perform expected action. Finally the scope of research has been discussed.

Keywords: IOT, Home automation, Industrial automation, Edge detection

[1] INTERNET OF THINGS (IOT)

IOT is system in which physical objects-gadgets are connected to each other and can be remotely controlled. In this system, vehicles, structures and different things inserted with hardware, programming, sensors and system network. It empowers these items to gather and trade information. The IOT permits items to be detected and controlled remotely across existing system foundation, making open doors for more straightforward reconciliation of physical world into PC based frameworks and bringing about improved proficiency, precision and monetary advantage. IOT Technology is developing another world for IT (Information Technology). Data mechanization has not halted with the server room, PCs, or PDAs. It is presently arriving

at all articles around us. Most gadgets around us are either as of now or will get associated in the coming years. They will have the option to detect and trade a wide range of valuable information data with savvy applications. Media communications, databases, and applications are turning out to be such a significant piece of our regular day to day existence. They will end up being a kind of advanced net, or skin, to our lives. Unexpectedly, with the picture of this future computerized world in our minds, one could even say, "No Net, No Planet. It is assessed that there are at any rate 8.4 billion IOT gadgets are accessible in the market in 2017. It is gauge that up to 2020 there will be 20 billion IOT gadgets are available in the market. It is because their pace of increment is

practically 31% every year. Up to year 2020 it is viewed as that value of Internet of Things in worldwide market is $7.1 trillion.

[2]THE BENEFITS OF INTERNET OF THINGS

The benefit of IOT Technology is discussed here:

Protection: Financial administrations associations required arrangements and systems to proactively address these dangers while setting up an availability convention to manage any special cases. Information utilization and maintenance strategies should be returned to. The objective, obviously, is to secure buyer protection and stick to suitable guidelines without giving up the utility of IOT information.

Security: Information accumulated, shared, and followed up on must be secure for all gatherings. Most gadgets will be new and moderately untested in reality prompting some degree of conduct vulnerability and its consequent effect.

Identity Management: As gadgets multiply inside the home, complex connections among these gadgets and family unit individuals emerge. Gadgets, for example, autos, wellness hardware, or home apparatuses may have various clients. Conventional, personality the board arrangements are not fit for taking care of these connections and their related complexities.

Interoperability: Companies are racing to showcase with methodologies to send and coordinate these gadgets in vehicles, machines, systems, PCs, telephones, wearable, and equipment. Without concessions to interoperability principles, the IOT experience will neglect to convey.

There are numerous institutionalization activities however the procedure is relied upon to occur after some time.

Joint effort: To satisfy their latent capacity, IOT gadgets, including empowered gadgets, should impart inside setting among one another and among clients. When interoperability issues are settled, these gadgets can viably convey data and grasp the job of a worth included gadget. **Personalization:** There will be a critical effect in the medicinal services industry where these gadgets can help in anticipation and fixes.

Unwavering quality: Fundamental situations in which gadgets separate and glitch should be tended to and settled. For basic situations, for example, car collisions, water holes, fire or checking well being conditions, there should be a goals and reinforcement plan set up.

[3]APPLICATIONS OF IOT

IOT technology has been adopting in several sectors such as

Smart Cities

It could be used to manage traffic especially during traffic jams, peak hours, accidents, rains. It could be used to manage street lights—automatically switch them off within presence of sunlight & switch them on at onset of darkness. Another useful application is alerting officials to empty trash bins when filled with waste.

Home Automation

The electrical & electronic appliances within home such as fan, lights, outdoor lights, fire alarm, kitchen timer, etc. could be controlled using various control techniques.

Industrial Automation

User could monitor emission of toxic gases to avoid damage to workers' health & environment.

Health Monitoring

User could use this technology to identify health problems. This system will be very useful to senior citizens & disabled people who live independently.

Consumer applications

Several developed applications of IOT devices have been made to make the easy life of the consumer. The application made to use by the consumer include the vehicles and home automation.

Smart Home

The gadgets of IOT have been viewed as an enormous idea. The home mechanization is a piece of this enormous idea. The home automation comprises of the gadgets. These are utilized for lighting, warming as well as cooling. It incorporates the media application just as the gadgets used to make sure about the IOT frameworks.

Senior consideration

It is one key use of savvy home. This application offers the assistance to the individual who are impairing genuinely. These applications are useful for the individuals who are old in age. The home frameworks apply the proficient system which can lessen the issue of a proprietor that is looked because of his handicaps. To perceive the voice, it is plausible to furnish the assistance to the clients with sight and versatility impediments.

Clinical and human services

The Internet gadget of Medical Things has been viewed as a use of the IOT. It is additionally called

the web of wellbeing things. It has been utilized to determine the clinical and medical problem. This issue might be the information assortment. The applications are utilized to make the investigation for examine. These medicinal services applications likewise used to screen the arrangement of emergency clinic. These applications are known as the Smart Healthcare make the medicinal services framework in advanced structure. These frameworks associate the accessible clinical assets with administrations of medicinal services.

[4] LITERATURE REVIEW

In past, there were several researchers who researched on IOT devices and Fog Computing. It was interesting field of research for researcher therefore numerous researchers considered IOT technology and cloud as well as Fog computing for research work. Although there are a number of researches, articles, papers but some of main existing article and papers are discussed here: Several researcher introduced and did survey on IOT [1,5] while many did research on future of internet[2]. They discussed Internet of Things architecture [9], possible applications [25] and key challenges [21, 23, 24]. Some authors have explained role of Fog computing [3] in the internet of things. Research on Wireless Sensor system [4] according to the concept

[5] PROBLEM STATMENT

It has been observed that some of existing research limited to IOT attacks. However the work considered the security but this work is ignoring the performance. No work has been made to reduce the cost of operations. There is requirement of innovative technique which must be useful and provide better performance and easy to access. In some researches IOT devices used in home are discussed in the research work, therefore, the scope of the work is limited. There may be proposed IOT based devices which are secured and easy to use in industry as well as at home.

[6] PROPOSED WORK

The research has dealt with the graphical processing during IOT operation. During camera surveillance in IOT system, the detected images takes lot of time during comparison. Due to delay the decision for alert are further delayed. The proposed model has reduced the size of image by applying edge detector and image resizing module. This would reduce the image size more over it would also take less comparison time.

of IOT -Internet of Things has been presented. More over many authors have introduced smart security Solutions [6] based on Internet of Things. Some authors introduced Energy Efficient [7] Smart Home Automation System [11, 27]. Some researches focused on Fog computing [10, 13] and some researchers focused on Mobile Edge Computing Device to Support Data Collecting and Processing from IOT [8, 16, 18, 19, 20]. Approach to QoS-based Task Distribution [12] in Edge Computing Networks for IoT Applications is also proposed. Multi-agent [15] Based Flexible IOT Edge Computing Architecture Harmonizing Its Control with Cloud Computing has been introduced. Case study on Blockchain [14] for IOT security and privacy has been performed. Survey Paper on How Temperature Affects IOT Communication [17] has been presented. A Review on Internet of Things (loT), Internet of Everything (IoE) and Internet ofNano Things (IoNT) [22] is also made. In many researches Survelliance Cameras and IOT was integrated to control crime [26, 28] .

These researches have confirmed the need and scope of IOT in recent era. The IOT has played significant role in integration of cloud computing, edge computing for Home automation and Industrial Automation.
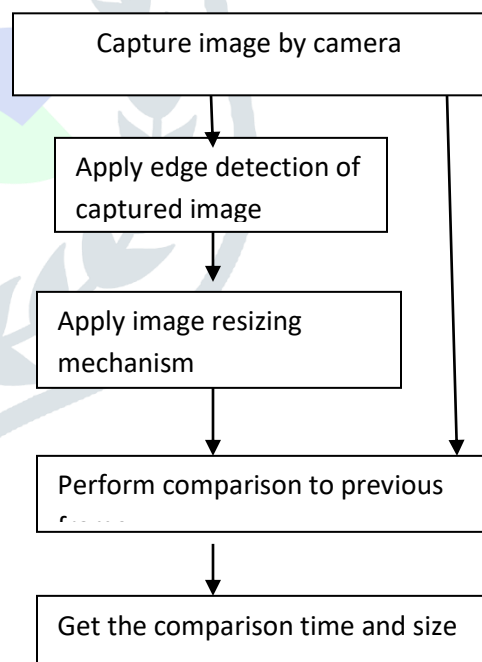

Fig 1 Proposed work flow

The several objective of this research has been discussed below

1. To study the existing IOT based system.

2. To study the loopholes of traditional System.
3. To propose better solution to resolve the issues in previous IOT systems.
4. To perform comparative analysis of tradition work with proposed work in order to represent how proposed model is better than previous.
5. To withdraw conclusion and discuss the scope of research according to results and discussion.

[7] RESULTS OF IMPLEMENTATION

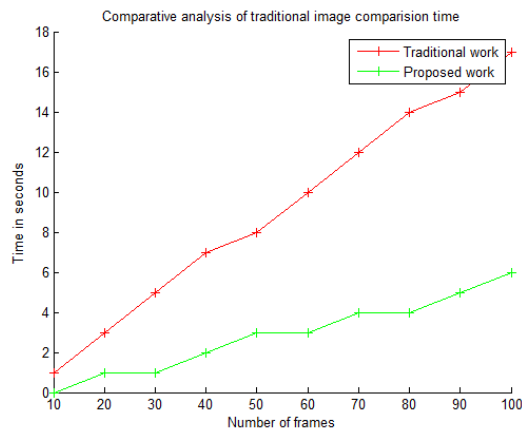Comparative analysis of Time consumption during comparison in tradition & proposed comparison system has been plotted here:

Fig 2 Comparative analysis of time consumption in tradition & proposed comparison system

Comparative analysis of Queuing delay in tradition & proposed comparison system is defined here:
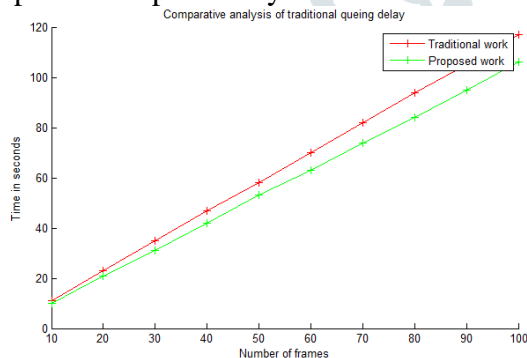

Fig 3 Comparative analysis of queuing delay in tradition & proposed comparison system

Comparative analysis of File Size in tradition & proposed comparison system is defined here:
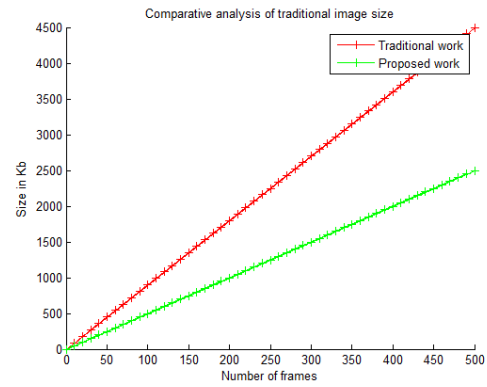

Fig 4 Comparative analysis of file size in tradition & proposed comparison system

EDGE DETECTION

The images captured from camera would be processed using edge detector. This would eliminate the useless portion of graphics and would be helpful to reduce image base size and reduce the comparison time.

Before edge detection

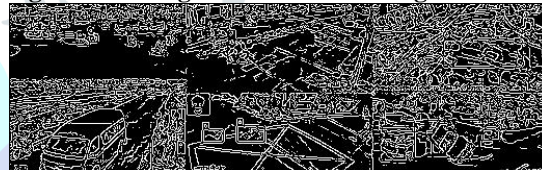**Fig 5 Before edge detection After edge detection**
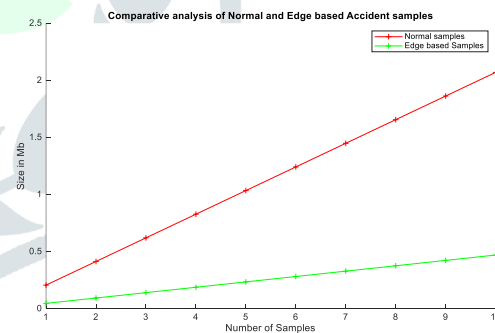

Fig 6 After edge detection

Fig 7 Comparative analysis of normal and edge based samples

Matlab script for time comparison during edge based and normal sample comparison
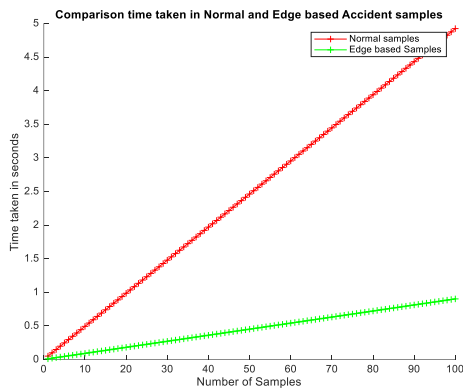
Fig 8 Comparison time taken in normal and edge based samples

[8] CONCLUSION

The proposed work is found more efficient as compared to traditional IOT system. This system has reduced the size of image that leads to reduction in burden over storage device. Moreover the comparison time of graphical image is less in proposed work. This research has simulated the time consumption and file size using Matlab.

[9] SCOPE OF RESEARCH

Due to limitation in existing IOT related researches, it has been observed that there is need to introduce versatile and flexible approach for industrial and home automation system. There is need to enhance the security. More over there is need to improve the performance in IOT system. The automation could be implemented in IOT system by integrating Artificial intelligence.

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