



An Iot Based Human Deduction System in Queueing Sector

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Abstract:

The new time of web and Internet of Things (IOT) worldview is being empowered by the plan of different gadgets like RFIDs, sensors, and so forth. This prompts a shrewd city. A noteworthy issue in reality is the lining framework which is available in every one of the areas. A run of the mill case is the managing an account area. In the current framework, token framework is utilized to discover the general population tally in managing an account framework. The human conclusion should be possible by utilizing picture handling which is connected in android application through Internet of Things (IOT) utilizing which others can choose whether to hold up in line or not. It can likewise be utilized to discover to what extent it takes to finish an assignment. It is fundamentally utilized as a part of lessen time utilization. It can likewise be utilized for security purposes like on the off chance that anybody is stuck in bank the administrator gets naturally an alarm message showing the human nearness. From the present area the customer can choose whether to go to bank or not from our present circumstance. It also provides security alarms, crisis messages to the directors through flame, vibrating sensor. A programmed esteem is opened if there should be an occurrence of crisis to control fire. Uniquely, it provides centre on human derivation as a key empowering innovation.

Keywords: Convolution Neural Networks (CNN): Global Positioning System (GSM): Internet of Things (IOT): Liquid Crystal Display (LCD): Sensors

1. Introduction

IOT (Internet of Things) is the most recent inclining innovation; it is a system of gadgets and other thing which is installed with equipment and programming which sets up an association with exchange information. [1] Suraj Choudhari, Tejas Rasal, Shubham Suryawanshi, Mayur Mane, Prof. Satish Yedge defined IOT as The Internet of things (IOT) is the inter-networking of physical devices, vehicles (also referred to as "connected devices" and "smart devices"), buildings, and other items embedded with electronics, software, sensors, actuators, and network connectivity that enable these objects to collect and exchange data. Everything is exceptionally identifiable. Master's gauge that IOT comprises of 30 billion questions by 2020. Global market estimation of IOT will reach \$7.1 trillion by 2020. The correspondence happens through a Wi-Fi association between the equipment and the product. Individuals remain in a line for products or administrations. In long time past days, there is line for everything except for now-a-days it is lessened by web based business yet not profoundly. Remaining in line gives an endowment of persistence and resilience. We will get worn out and some other medical problems while remaining in a line. Inquiries about express that individuals who has no work imagines that the holding up time as a long one. So they should be diverted. Recordings, magazines, daily papers, TV are the diverting variables. There are two sorts of collection to be specific: parallel and serpentine line. Reasonableness is normal from the line. As a rule line is identified utilizing the token framework however it isn't much proficient as it doesn't decrease the holding up time.

2. Existing System

In the article [2], Aravinda S. Rao, JayavardhanaGubbi suggested that Crow identification is done on optical

stream manifolds. Two much of the time utilized activity datasets: 1) Weizmann and 2) Kungliga Tekniska högskolan. Complex learning based methodologies are the most broadly utilized system for unsupervised activity acknowledgment. In this paper, a mix of spatial, fleeting, and movement data is utilized. The calculation brought about amazing execution.

In article [3], Arun R, Priyesh, P.P proposed that Smart Queue utilizes three noteworthy segments in particular, GSM, a PC, a microcontroller. The means included are: Gets message from client, interpreting it and refreshing the line database, Sending affirmation to the client, Showing tokens and sending messages to clients ahead of time of 30 minutes, Flushing the line. The disadvantage is the deferral between the messages. The client needs to send the message utilizing the settled configuration. In the event that the organization is coordinated then the client is acknowledged to whole the line and gave the token else it tosses a blunder message.

In the paper [3] Venkatesh Bala Subburaman, Adrien Descamps, Cyril Carincotte recommended that Head detector is used for people count, it utilizes the intrigue purpose of the angle data to identify the head from the picture. It utilizes foundation subtraction methods for covering the pictures. Intrigue point is encompassed by various sub-windows which utilize a classifier to state whether the picture is head or not. The centroid of every

district shapes our advantage point. Looking area can be diminishing through the utilization of the foundation subtraction method which is likewise utilized for execution change.

In the survey [5] Irshad Ali and Matthew N. Dailey intimate that Human following and location is a fathomed. Red rectangles show assessed head positions, and green rectangles demonstrate ground truth head positions. The group thickness is ascertained in view of the connection between the aggregate quantities of pixels in all individual jumping boxes to the aggregate number of pixels in the casing. Our movement display depends on a moment arrange auto-backward dynamical model which incorporates a roundabout Gaussian. An affirmation by-grouping strategy is utilized for limiting the accompanying missteps.

Convolutional Neural Networks (CNN) is used for human detection. In the article [6] Maria Tzelepi and Anastasios, proposed a human group location strategy for ramble flight security. This approach utilizes neural system layers where the five are convolution and the rest are completely associated. The last layer is supplanted with the ordering layer whether its group or non-swarm. CNN is primarily utilized as a part of face, protest and digit discoveries. Diverse classes are distinguished utilizing the straight discriminant investigation display.

In the article [7] Jinshi Cui, HongbinZha, Huijing Zhao, RyosukeShibasaki suggest that Mobile robotics is tracked efficiently using the laser detection. Video cameras are used to capture each and every frame of the crowd. Laser scanner is uniquely used to filter the snapshots of the human. The pack discovery is done in this paper through the foot developments. Each picture is spoken to as lattices. The lasered pictures are part into focuses. Parzen window channel is utilized for expanding the nearby pictures. The distinctive leg developments are the two feet still on ground, left leg quicken, two feet's get together, left leg decelerate and the two feet's on the ground.

In the article [8] Robin Kravets, HilfiAlkaff, Andrew Campbell, Karrie Karahalios, KlaraNahrstedt presents the CrowdWatch architecture, which enables scalable, distributed crowd monitoring and detection via users' smart phones from the "inside-out". As such, Crowd Watch represents a radically different approach in contrast to external approaches that monitor the crowd from the "outside-in". Crowd Watch operates in an automated manner and requires no specialized devices or infrastructure other than standard off-the-shelf smart phones and scales with the number of phones in the crowd. As a result, Crowd Watch offers users access to unprecedented information to guide them in a crowd.

3. System Architecture

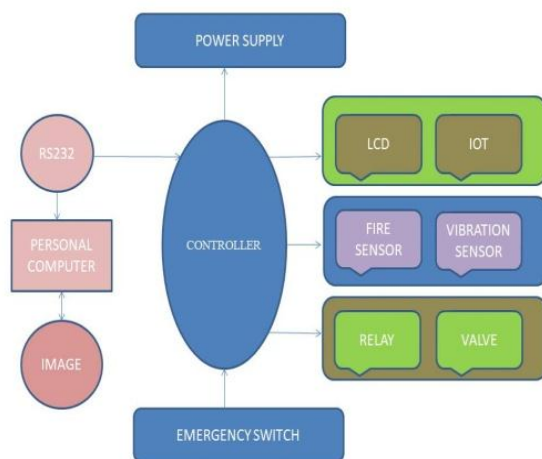


Fig. 1: System Architecture of Queuing Sector

In the article [9] Naser Hossein Motlagh, MiloudBagaa, and Tarik Taleb discussed the potential of UAVs, equipped with IoT devices, in delivering IoT services from great heights. A high-level view of a UAV-based integrative IoT platform for the delivery of IoT services from large height, along with the overall system orchestrator, is presented in this article. Fig:1 represents System Architecture of Queuing Sector.

The Arduino UNO controller is used in this system architecture. It uses 14 digital input/output pin. Arduino UNO is the cheapest microcontroller when compared to other controller. The crowded image is placed as input to the personal system using the RS232 cable. Crowd detection is based on image processing which uses MAT lab software. Fire sensor version is SW-420 and for flame sensor it is YG1006. The RS232 cable acts as an interface. The fire sensor is also called as flame sensor. Both the fire sensor and flame sensor consists of comparator. Comparator used is LM393. Fire sensor, vibration sensor are used to provide security to the system which detects the fire accidents and theft activities and intimates to the user using an LCD display and web page using IOT modem. An emergency switch is placed which is on by the users during the emergency situations.

In the article[10] Mohammed Ghazal, Rania Hamouda, Samr Ali proposed a smart queue management system for delivering real-time service request updates to clients' smart phones in the form of audio and visual feedback and the system aims at reducing the dissatisfaction with services with medium to long waiting times.

4. Proposed System

The modules are as follows:

4.1 Image Analysis Module:

The Queue consists of a large crowd. It can be detected in three ways: using camera, using videos, using images. The crowd detected using cameras cannot give the exact count of people because it is difficult to keep on monitoring the cameras and the size of crowd captured by crowd is small which is a major drawback. [11] Anbuselvan. J, Citharthan. D, Varatharaj M suggested that IOT based which generates token and senses the position of queue and is uploaded in the cloud which is then informs the token holder's mobile phone or computer. Video surveillance includes the moving people in each frame so it does not work well for detection. In this paper, we use images as input to analyse the crowd. The images is analysed step by step to get the exact count of the human present in the location. Human count value is based on the blob value. It is used Markov Random process is used in this system. The image is embedded into the controller through a Personal computer interfaced via a RS232. The count is sent to the IoT modem and LCD display via controller. Database is used to store the images. The necessary power supply is provided to the controller. This is very useful not only to the users but also to manager of the concern to decide the closing time. Detects the human persons inside the organisation and prevents from various problems. The human count is done based on the blob value. [12]M. Mark Davis and J. Heineken propose taxonomy based on the service manager's ability to control the customer's perception of the queuing experience. It uses Markov Random Process to find the segmentation type. The major algorithm used in this system is OTSU Threshold algorithm. The threshold value obtained using the above algorithm is used for segmentation. Region props is used or the feature extraction the image. If the blob is then the human presence is also high. It uses all inbuilt commands. Generally, Blob is referred as big sized binary object. Here the humans are considered as blob and thus the human count is predicted.

4.2 Fire Detecting Module:

[13] Md Iftekharul Mobin, Md Abid-Ar-Rafi, Md Neamul Islam and Md Rifat Hasan Safe from Fire (SFF) is an intelligent self controlled smart fire extinguisher system assembled with multiple sensors, actuators and operated by micro-controller unit (MCU). Fire accidents cause a severe damage both physically and mentally. Although safety precautions are maintained in each and every organisation it is difficult to control fire. Awareness programs are conducted in concerns about the operation of fire control devices but due to afraid they are not properly used. Fire accidents leads to loss of human beings, injuries, goods, etc. In this system, we used a fire sensor which detects the fire in the present location based on the temperature, humidity, pressure. If these parameters are above the predefined value then it automatically creates a notification message and forward to the owner, fire extinguisher and owner using the application. [14] Reshma Shinde, Ritika Pardeshi, Archana Vishwakarma, Nayan Barhate suggested that Automatic fire alarm system provides real-time surveillance, monitoring and automatic alarm. If the predefined value exceeds then the overcrowd value is displayed as output else the output is less crowd. An emergency switch is placed which is on to indicate the fire notification in the LCD display of the current location with a buzzer sound. This provides more security. It provides a security message via a web page to the owners.

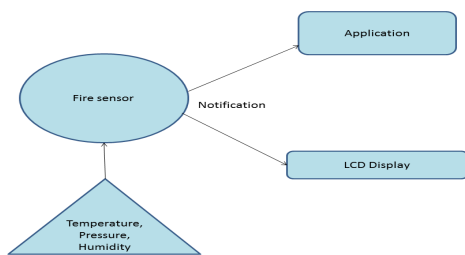


Fig. 2: Block diagram for Fire Detection

4.3 Fire Control Module:

Fire control is very challenging task. Many fire controllers died due to the over heat. In this proposed system, a relay is used for fire control which consists of a water tank with the motor. [15] Poonam B. Patil et.al used Prof. R.S. Suryavanshi’s ideas and proposed a system to control the home appliance using android apps and GSM. A relay is an electromagnetic switch operated by a relatively small electric current that can turn on or off a much larger electric current. The heart of a relay is an electromagnet (a coil of wire that becomes a temporary magnet when electricity flows through it). Generally, A relay valve is an air-operated valve typically used in air brake systems to remotely control the brakes at the rear of a heavy truck or semi-trailer in a tractor-trailer combination. If the emergency switch is on, the valve of the relay automatically opens the water is spread to all the places. This acts as a first aid which prevents from spreading of fire to large extent. If the water of the tank is over it creates an alert and fills automatically.

4.4 Theft Detection:

Theft and robbery takes place now and then in our day to day life. In organisation, the people pass through a scanner to detect the thief’s based on the things used for it. It is very expensive and not affordable everywhere. So in this system, a theft detecting sensor is used which works based on the parameters like pressure, acceleration, velocity, speed. It uses a predefined vibration value if the system crosses the predefined value then it sends an alert message stating the theft activity to the admin. An alert message is

passed to the owner and police department indicating a theft incident with the GPS location of the nearby stations.

5. Experimental Results:

The Fig: 3 illustrate the Crowd monitoring with security system using IOT modem Kit.

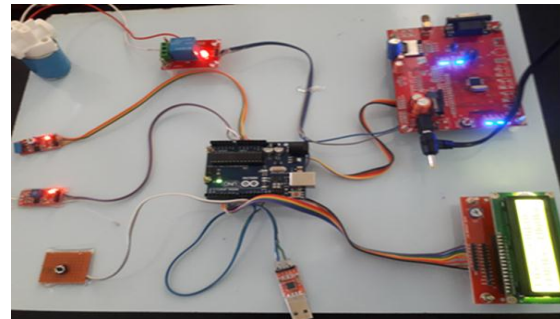


Fig.3: IOT Crowd Kit



Fig.4: Comparison of Crowd Values

The Fig (4) displays the comparison of the crowd values for different inputs like Normal and Abnormal

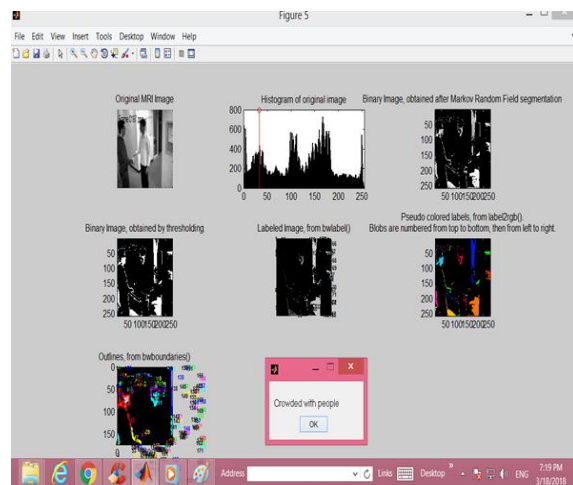


Fig 5: Detection Activities

Fig (5) describes about the various detection activities like count, presence of people, grey scale image, and histogram.

[Crowd Monitoring with Security System using IOT](#)

Date	Fire	Vib	Cw	Eng
March 21, 2018, 3:16 pm	1	0	Normal	Normal
March 21, 2018, 3:16 pm	1	0	Normal	Normal
March 21, 2018, 3:16 pm	0	0	Normal	Normal
March 21, 2018, 3:16 pm	0	0	Normal	Normal
March 21, 2018, 3:17 pm	0	0	ab-Normal	Normal

Fig. 6 : Web page Notification

Fig: 4 indicate Web page notification with the changing values of the components over time.

Fig 7: SMS Notification

Fig (5) indicates Alert Message are send to admin, fire station and police station during the fire accidents and Theft.

6. Conclusion

By detecting crowd images, this paper finds that the count of people can be exactly evaluated. To effectively detect the crowd we used the image as input instead of videos. The number of people present in the queue is send to the users using an IoT modem which can be accessed only by registered user of the application. Queue can be minimized to the maximum using this system. It is not only useful for the people outside the queue it also helps to find the number of members in queue from the current location. Decision making is applicable. It provides relief from the security issues like emergency, fire using sensor and alert message is send the owner of the concern as an alert message and also displayed in the LCD display. The proposed system is proved by the experimental results. In future work, we will collect more images and further the study the queue pattern.

References

- [1] "Survey Paper on Internet of Things: IoT" Suraj Choudhari, Tejas Rasal , Shubham Suryawanshi , Mayur Mane, Prof. Satish Yedde International Journal of Engineering Science and Computing, Volume 7 Issue No.4 April 2017
- [2] "Crowd Event Detection on Optical Flow Manifolds", Aravinda S. Rao, Student Member, IEEE, JayavardhanaGubbi, Senior Member, IEEE, SlavenMarusic, and MarimuthuPalaniswami, Fellow, IEEE.
- [3] "Smart Queue Management System Using GSM Technology" Arun R, Priyesh, P.P Advance in Electronic and Electric Engineering. ISSN 2231-1297, Volume 3, Number 8 (2013), pp. 941-950© Research India Publications
- [4] "Counting people in the crowd using a generic head detector", Venkatesh Bala Subburaman, Adrien Descamps, Cyril Carincotte Image Department, Multitelabsl, 7000 Mons, Belgium.
- [5] "Multiple Human Tracking in High-Density Crowds",Irshad Ali and Matthew N. Dailey, Computer Science and Information Management, Asian Institute of Technology,Bangkok, Thailand.
- [6] "Human Crowd Detection for Drone Flight Safety Using Convolutional Neural Networks", Maria Tzelepi and Anastasios, Department of Informatics, Aristotle University of Thessaloniki, Thessaloniki, Greece.
- [7] "Laser-based detection and tracking of multiple people in crowds" Jinshi Cui, HongbinZha, Huijing Zhao, RyosukeShibasaki.
- [8] "CrowdWatch: Enabling In-Network Crowd-sourcing",RobinKravets, HilfiAlkaff, Andrew Campbell, Karrie Karahalios, KlaraNahrstedt, University of Illinois and Dartmouth College.
- [9]"UAV-Based IoTPlatform:A Crowd Surveillance Use Case",NaserHosseinMotlagh, MiloudBagaa, and TarikTaleb.
- [10] "An IoT Smart Queue Management System with Real-Time Queue Tracking",2015 Fifth International Conference on e-Learning
- Mohammed Ghazal, Rania Hamouda, Samr Ali Electr. & Comput. Eng. Dept., Abu Dhabi Univ., Abu Dhabi, United Arab Emirates
- [11] "IoT Based Solution to Reduce Queue in the Banking Sector", Anbuselvan. J, Citharthan. D, Varatharaj M, Department of Electrical and Electronic Engineering, Christ the King Engineering College, Anna University.
- [12] M. Mark Davis and J. Heineken, "Understanding the roles of the customer and the operation for better queue management, "International Journal of Operations and ProductionManagement, vol. 14, no. 5, pp. 21–34, 1994. [Online].
- [13] "An Intelligent Fire Detection and Mitigation System Safe from Fire (SFF)" Md Iftekharul Mobin, Md Abid-Ar-Rafi, Md Neamul Islam, and Md Rifat Hasan International Journal of Computer Applications (0975 - 8887) Volume 133 - No.6, January 2016
- [14] Reshma Shinde, Ritika Pardeshi, Archana Vishwakarma, Nayan Barhate "Need for Wireless Fire Detection Systems using IOT" International Research Journal of Engineering and Technology (IRJET), Volume: 04 Issue: 01 Jan 2017
- [15] Poonam B. Patil, Rupali R. Patil, Swati V.Patil , Avadhoot R.Telepatil," Automation System Using Android and Arduino Board", International Journal of Innovative Research in Science, Engineering and Technology (An ISO 3297: 2007 Certified Organization) Vol. 5, Issue 4, April 2016