WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Covid 19 Spread Prevention Based on IoT around ATM machines

Syed Ghouuse*

Hipoint college of engineering and technology, Chevella, India
DOI: https://doi.org/10.55248/gengpi.2022.3.6.29

A B S T R A C T

COVID-19 has been discovered since 2019. It began in China and expanded over the world; its influence on countries was so severe that it affected the economics, politics, and others, as well as the lives of individuals in all facets of life. This illness is spreading so quickly that seven people out of every ten have it. To decrease losses in all aspects for the entire world, a device was designed to be inserted in ATMs via the Internet of Things, with the recommended approach detecting and preventing COVID-19 spread around ATMs. Picture processing algorithms are used to capture the person's image at the ATM, whether he is wearing a mask or not. If the individual is not wearing a mask, the system will enter a state of freeze and they will be unable to access it. It makes use of the Raspberry Pi and the Raspberry Pi Camera Module. Biometric sensors can scan the thickness of a person's finger, which is typically 4-6 mils thick. When inputting the pin code or using the ATM, the individual should wear gloves, keeping a social distance of about 2 meters (6 feet) with ATMs that use an ultrasonic sensor.

Keywords:ATM’s, Biometric sensors, Raspberry pi, camera module, COVID-19

1. Introduction

The current global crisis, COVID-19, has had such an influence on individuals from all areas of life that we may never return to our prior status [1][2]. Because COVID-19 has generated or extended digital technology applications and use cases, this pandemic is acting as a catalyst for digital transformation. It has also prompted governments, corporations, and people to rethink their goals, societal/ethical attitudes, and commercial methods. Numerous causes for IoT adoption being slower than predicted in various industries have been overcome or eliminated [3] . COVID-19 has resulted in lifestyle changes such as working/studying from home. The COVID-19 campaign led in a softened approach on privacy problems, enhanced technical confidence, and a quicker clearance procedure [4][5]. The COVID-19 pandemic has inspired us to create a system capable of detecting and limiting the transmission of coronavirus at its most basic levels[6][7]. As a result, our primary goal is to identify and prevent the transmission of COVID-19 near ATMs, which are regarded as the primary focal point and source of viral dissemination throughout the country. As a result, utilizing Image Processing methods, the suggested strategy may identify and avoid COVID-19 spread near ATMs[8]. Whether the individual is wearing a mask or not, image processing techniques are utilized to capture his image at the ATM. If the individual is not wearing a mask, the system will go into freeze mode and the person will be unable to access it. The Raspberry Pi and Raspberry Pi Camera Module are utilized to do this[8,9,10] . Biometric sensors can detect the thickness of a person's finger, which is typically 4-6 mils thick. This indicates that the individual should wear gloves when entering the pin code or using the ATM. Maintaining a social distance of roughly 2 meters at ATMs (6 2 feet). ATMs' ultrasonic sensors will monitor the distance between people, as ATMs are now thought to be the major source of Coronas virus dissemination. Such preventative methods as IoT-based COVID-19 detection and prevention have proliferated around ATM machines.

2. Literature Review

Currently, the majority of individuals withdraw money via ATMs[11][12]. Several ATM thefts have occurred in various places, despite CCTV cameras at the ATM facility. As a result, the security system will need to be updated. To create an ATM theft security system that employs creative and effective technology [13,14,15,16,17,18,19,20] to reduce these crimes. This gadget may also detect physical ATM assaults. In our recommended solution, they use a Recognizing Face Camera to capture the incoming person's face. Tilt and vibration sensors are used to identify anomalous ATM activity. The job of the Temperature sensor is to determine the temperature in the ATM booth [21,22,23,24,25]. The major purpose of this proposed system is to transmit an alarm via social media platforms like Facebook, Twitter, and Gmail while utilizing IoT and GSM networks. The thief is rendered unconscious by the application of a liquidator chloroform. This technology allows for precise monitoring and control. The ATM system is the most sophisticated networking technology I've come across[26,27,28,29,30]. The most difficult task is protecting such a secret system. This system uses Arduino as its controller device, together with sensors that monitor temperature, vibration, and tilt, to ensure safety and security against robberies and human manipulation. As a consequence, this approach eliminates the need for continuous human monitoring, decreases the storage of unwanted video feed, disseminates only abnormal conditions, and allows a faster response to a danger recognized by the system by shutting down the ATM. This approach has been shown to be an efficient and convenient ATM security monitoring solution. As the quantity of electronic transactions increases, so does the demand for quick and precise user identification and verification. ATM biometric authentication, which uses fingerprint and facial recognition, offers several advantages. The requirement for password PINs is a shortcoming in existing ATM authentication systems. Because PINs are readily watched and exploited, our proposed approach would give additional protection for ATMs in order to build security and address these illicit acts. Personal Identification Numbers (PINs) are replaced by an OTP created at random and supplied over the Internet of Things. The goal of the initiative is to remove the use of ATM cards. The consumer would be able to complete the transaction after biometric and OTP pin authentication. The account will be banned if three incorrect attempts are made in a row. This program also covers ATM fraud prevention. If the vibration sensor detects any suspicious activity, the ATM doors close, the fainting gas is discharged, and the surrounding neighborhood is informed. This will capture the perpetrator red-handed and prevent fraud. Because of the increase in fraudulent activities in card-based systems, this proposed ATM system uses biometric and OTP authentication. The cardless technique enables for more secure cash transactions as compared to a card-based system. Fingerprint and face recognition are examples of biometric authorizations, where each individual's fingerprint is uniquely recognizable. The OTP is sent to the connected account holder's cell phone via IoT Services. This technology enables secure ATM cash transactions. The vibration detection system's sensors detect the person's suspicious conduct. This strategy aids authorities in apprehending the thief swiftly. The proposed technique is a mock-up of an ATM system that might be modified to incorporate money withdrawal capabilities. A prototype device also exhibits the discharge of fainting gas. It may give consumers and bank money with safety and security by employing three successive identity verification and security methods.Since the beginning of 2020, the COVID-19 outbreak has had an influence on many aspects of our everyday life [31,32]. The majority of current procedures and routines, ranging from entertainment and education to healthcare and transportation, have been reconstructed to fulfill COVID-19 safety guidelines, whether indoors or outside[33,34,35]. This study looks into how low-cost IoT devices may be used in conjunction with cutting-edge embedded machine learning and blockchain to prevent the coronavirus from spreading within. The two essential areas of concentration are contact tracing and air quality control. Prototypes are constructed and demonstrated that use RFID for person identification, blockchain for contact tracking records, smartphone applications for notifications, and deep learning-based cough detection on low-cost IoT sensors[36,37,38,39,40]. The World Health Organization (WHO) COVID-19 pandemic in 2019 has put hundreds of countries at risk. The COVID 19 virus has wrecked havoc on nearly every country on the earth, with the Chinese bearing the brunt of the damage. Due to a lack of resources to tackle the COVID 19 outbreak, the vast majority of these countries were compelled to cut off partially or completely. Social distance is essential to avoid viral infections such as COVID-19. By avoiding intimate physical contact between people, we reduce the chance of receiving and disseminating the virus in the community. Since the outbreak, various research organizations have swiftly capitalized on the pandemic.IoT is a pioneer in this arena, employing a variety of technologies to address this global threat. To decrease COVID-19 transmission to others, the IoT system / linked devices/apps are used in early diagnostic procedures, patient monitoring, and post-patient recovery practice of prescribed protocols in COVID-19. We suggest for an Open CV, Computer Vision, and Deep Learning monitoring system to keep track of pathways and decrease congestion. Closed Circuit Television (CCTV) can identify the things, and drones can detect and measure the distance between the people[40,41,42,43,44,45,46].

3. System design

There are three inputs, including cameras, a biometric sensor, and an ultrasonic sensor, as well as two output buzzers and an LCD. To begin, the Raspberry Pi4 Camera Module 2 can record HD video and still images. It's simple for novices, and it's used in this project to identify whether or not a person is wearing a mask . The biometric fingerprint sensor R307 module simplifies the identification and verification of fingerprints. It is also simple to link with the Raspberry Pi 4; while entering a PIN, the thickness of a person's finger, which is normally 4-6 millimeters thick, may be examined using biometric sensors. It is utilized in this research to determine whether or not the individual is wearing gloves. Third, in this project, the ultrasonic ranging HC- SR04 module has a non-contact measuring range of 2cm to 400cm with a ranging precision of 3mm and is utilized to assess the social distance of around 6-feet. Fourth, the raspberry pi 4 module B is the system's heart; it is a single computer board the size of a credit card that can do many of the operations of a computer, such as gaming, word processing, spreadsheets, and HD video playback. All procedures in this project take place on a Raspberry Pi 4. Fifth, there is a 16 x 2 LCD panel that displays a message or data. The Raspberry Pi is presently turned on, and all of the devices may respond to any signals coming in or out of it. Picture processing methods at ATM are used to capture an image from the Raspberry Pi camera module. Examine whether the individual takes preventative steps. To begin, put on gloves of 4-6 thickness to input the pin code. Second, if the individual is wearing a mask, the Pi camera module will determine whether or not the mask is on. Third, the social distance should be at least 2 meters (6 feet). All of these requirements must be completed, otherwise the ATM will be locked. To complete the transaction, enter the PIN code into the ATM. Finish the ATM transaction.The Raspberry Pi camera v2 module is linked to the Raspberry Pi4 module through the CSI connection, which was designed specifically for attaching cameras

to the Raspberry Pi; the CSI bus can handle extremely high data rates. The Raspberry Pi4 is linked to four terminals in ultrasonic sensors. The first is VCC, which is attached to pin 2, GND, which is connected to pin 6, and TRIG, which is connected to pin 12. A USB serial converter was used to link the R307 optical fingerprint to the Raspberry Pi.The Raspberry Pi camera v2 module is linked to the Raspberry Pi4 module through the CSI connection, which was designed specifically for attaching cameras to the Raspberry Pi; the CSI bus can handle extremely high data rates. The Raspberry Pi4 is linked to four terminals in ultrasonic sensors. The first is VCC, which is attached to pin 2, GND, which is connected to pin 6, and TRIG, which is connected to pin 12. A USB serial converter was used to link the R307 optical fingerprint to the Raspberry Pi.

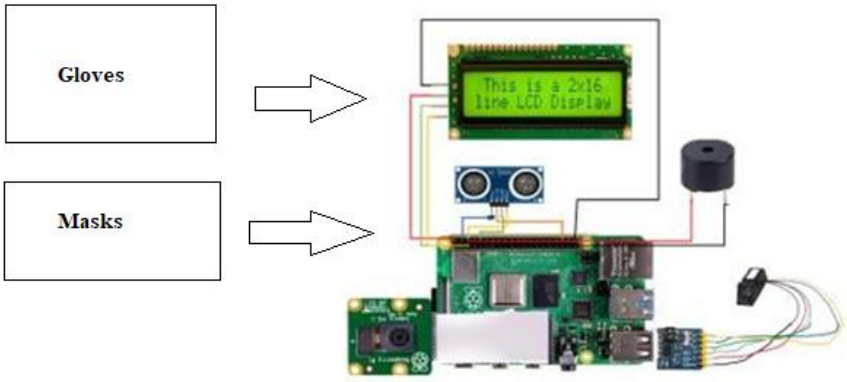

Figure 1 Proposed system block diagram

REFERENCES

[1] A.KhanumeRekha,"Anenhancedsecurityalertsystem for smart home using IOT," Indonesian Journal ofElectricalEngineeringandComputerScience,vol.13,nº1,pp.27-34, 2019

[2] B. Omar, "Times of Oman," Times of Oman, 2 july2016.[Online].Available:https://timesofoman.com/article/87279. [Acesso em 21 52022].

[3] Hussain, S. M., Yusof, K. M., Hussain, S. A., & Khan, A. B. (2022). An efficient interface selection scheme (dsrc/lte) of vehicles for data dissemination enabling v2v communication to support internet of vehicles (iov). In Soft Computing and Signal Processing (pp. 573-581). Springer, Singapore.

[4] buzzer. (2022). [pdf] (p. 1). Retrieved 21 May 2022,fromhttps://www.farnell.com/datasheets/2171929.pdf.

[5] Hakimi, A., Yusof, K. M., Azizan, M. A., Azman, M. A. A., & Hussain, S. M. (2021). A Survey on Internet of Vehicle (IoV): A pplications& Comparison of VANETs, IoV and SDN-IoV. ELEKTRIKA-Journal of Electrical Engineering, 20(3), 26-31.

[6] C.Prabhu, "Got scammed? It can be ages before yourbankreimbursesyou!,"OmanObserver,442018.[Online]. Available: Got scammed? It can be ages beforeyourbankreimbursesyou!.[Acesso em215 2022].

7] Hussain, S. M., Yusof, K. M., & Yusof, K. M. (2021). Dynamic Q-learning and Fuzzy CNN Based Vertical Handover Decision for Integration of DSRC, mmWave 5G and LTE in Internet of Vehicles (IoV). J. Commun., 16(5), 155-166.

[8] HcSr04UltrasonicSensorModule.indiamart.com.(2022). Retrieved 26 May 2022, fromhttps://www.indiamart.com/proddetail/hc-sr04-ultrasonic-sensor-module-19727491430.html.

[9] Hussain, S. M., & Ahmad, A. (2020). Handover Latency and Interoperability in Future Generation Wireless Mobile Heterogeneous Environment. Oriental journal of computer science and technology, 13(2), 1-7.

[10] H. Y. K. G. S. Faria, "Identification of Pressed KeysFrom Mechanical Vibrations," IEEE T. InformationForensics and Security, vol. 8, nº 7, pp. 1221-1229,2013

[11] Hussain, S. M., Yusof, K. M., Hussain, S. A., & Asuncion, R. (2021). Performance evaluation of vertical handover in Internet of Vehicles. International Journal on Smart Sensing and Intelligent Systems, 14(1), 1.

[12] Jacintha,V.,Nagarajan,J.,Yogesh,K.,Tamilarasu, S., &Yuvaraj, S. (2017). An IOT BasedATM Surveillance System. 2017 IEEE InternationalConferenceOnComputationalIntelligenceAndComputing Research (ICCIC).https://doi.org/10.1109/iccic.2017.8524485

[13] Al Marzuqi, H. M. O., Hussain, S. M., & Frank, A. (2019). Device activation based on voice recognition using Mel frequency cepstral coefficients (MFCC's) algorithm. Int. Res. J. Eng. Technol, 6(3), 4297-4301.

[14] Al Hattali, S. S. K., Hussain, S. M., & Frank, A. (2020). Design and development for detection and prevention of ATM skimming frauds.

Indonesian Journal of Electrical Engineering and Computer Science, 17(3), 1224-1231.

[15] K. Yusof, "ROP warns against fake messages on ATMcards," Oman Observer, 12 May 2019. [Online].Available: http://www.omanobserver.om/rop-warns-against-fake-messages-on-atm-cards/. [Acesso em 21 52022].

[16] Hussain, S. M., Zehra, I., & Khan, A. B. (2020). Interoperability in Future Generation Wireless Communication Systems-A Review. Solid State Technology, 63(1s), 1250-1257.

[18] Nakkasem, T. (2022). V-Model. Medium. Retrieved 26 May 2022, from https://medium.com/software-engineering-kmitl/v-model-3a71622b3d82.

[19] Hussain, S. M., Saidi, S. A. S. A., & Frank, A. (2019). IOT based Monitoring and Detection of Electromagnetic (EM) Radiation Levels. Journal of Student Research.

[20] NavinKumar,M.,Raghul,S.,NirmalPrasad,K.,&NaveenKumar,P.(2021).BiometricallySecuredATMVigilanceSystem.20217ThInternationalConferenceOnAdvancedComputingAndCommunicationSystems(ICACCS).https://doi.org/10.1109/icaccs51430.2021.9441975

[21] Al Rawahi, A. Y. H., Hussain, S. M., & Frank, A. (2019). Design and Development of IOT based Low Power Consumption in Employee Meeting Rooms. Journal of Student Research.

[22] Petrovic, N., &Kocic, D. (2021). IoT for COVID-19IndoorSpreadPrevention:CoughDetection,AirQualityControl and Contact Tracing. 2021 IEEE 32NdInternational Conference On Microelectronics (MIEL).https://doi.org/10.1109/miel52794.2021.9569099.

[23] Hussain, S. M., Yusof, K. M., Hussain, S. A., & Eberechukwu N, P. (2019). A review of interoperability issues in Internet of vehicles (iov). International Journal of Computing and Digital Systems, 8(01), 73-83.

[24] Takkar, S., Rakhra, M., Ratnani, A., SaummyaProtyay,D.,Pandey,P.,&Arora,M.(2022).AdvancedATMSecuritySystemUsingArduinoUno.IEEE.Retrieved10May2022,fromhttp://10.1109/ICRITO51393.2021.9596341.

[25] Hussain, S. M., & Bhasha, S. (2014). Design of women safety system using RFID, 8051microcontroller and GSM based technology a prototype. International Journal of Advanced Research in Computer and Communication Engineering, 3(6), 6849-6850.

[26] Umair,M.,Cheema, M.,Cheema,O.,Li,H.,&Lu,H. (2021). Impact of COVID-19 on IoT Adoption inHealthcare, Smart Homes, Smart Buildings, Smart Cities,Transportation and Industrial IoT. Sensors, 21(11), 3838.https://doi.org/10.3390/s21113838

[27] Shaik, J. B., & Shaik, M. H. (2014). Voter Identification and Detection System using RFID and GSM to stop rigging in the elections. International Journal of Innovative Research in Electrical, Electronics, Instrumentation and Control Engineering, 2(6).

[28] waste disposal | Types & Methods. Encyclopedia Britannica. (2022). Retrieved 28 March 2022, from https://www.britannica.com/technology/waste-disposal-system.

[29] Hussain, S. M., Yusuf, K. M., & Hussain, S. A. (2017, December). A conceptual framework on IOT based system designto prevent road accidentsin accident prone cities. In 2017 International Conference on Infocom Technologies and Unmanned Systems (Trends and Future Directions)(ICTUS) (pp. 205-210). IEEE.

[30] Hussain, S. M., Yosof, K. M., & Hussain, S. A. (2018, October). Interoperability Issues in Internet of vehicles-A Survey. In 2018 3rd International Conference on Contemporary Computing and Informatics (IC3I) (pp. 257-262). IEEE.

[31] waste to energy. SIEMENS ENERGY. (2022). Retrieved 26 May 2022, from https://www.siemens-energy.com/global/en/offerings/power-generation/gas-engines/aplication/waste-to-energy.html.

[32] Hussain, S. M., Yusof, K. M., & Hussain, S. A. (2019). Interoperability in Connected Vehicles–A Review.

[33] What Is Electricity? - Definition & Concept. study.com. (2022). Retrieved 28 March 2022, from https://study.com/academy/lesson/what-is-electricity-definition-lesson-quiz.html.

[35] M. V. T. Suprita M. Patil, "IoT based solar energy monitoring system," in 2017 International Conference on Energy, Communication, Data Analytics and Soft Computing (ICECDS), Chennai, India, 2017.

[36] E. Kabalci, A. Gorgun and Y. Kabalci, " 4th International Conference on Power Engineering, Energy and Electrical Drives," in 4th International Conference on Power Engineering, Energy and Electrical Drives, Istanbul, Turkey, 13-17 May 2013.

[37] L. Wang and K.-H. Liu, "Implementation of a web-based real-time monitoring and control system for a hybrid wind-PV-battery renewable energy system," in 2007 International Conference on Intelligent Systems Applications to Power Systems, Kaohsiung, Taiwan, 5-8 Nov. 2007.

[38] What Is a Power Supply, a. (2022). What Is a Power Supply & How Does It Work? | Advanced Conversion Technology. Advanced Conversion Technology. Retrieved 26 May 2022, from https://www.actpower.com/educational/what-is-a-power-supply-and-how-does-it-work/.

[39] Hussain, S. M., Yusof, K. M., Hussain, S. A., Asuncion, R., & Ghouse, S. (2021). Integration of 4G LTE and DSRC (IEEE 802.11 p) for Enhancing Vehicular Network Performance in IoV Using Optimal Cluster-Based Data Forwarding (OCDF) Protocol. International Journal of Interactive Mobile Technologies, 15(14).

[40] Hussain, S. M., Yusof, K. M., Hussain, S. A., & Asuncion, R. (2021). Performance evaluation of vertical handover in Internet of Vehicles. International Journal on Smart Sensing and Intelligent Systems, 14(1), 1.

[41] What is LED? - Definition, Working, Properties, Uses, Advantages. BYJUS. (2022). Retrieved 26 May 2022, from https://byjus.com/physics/light-emitting-diode/.

[42] Hussain, S. M., Yusof, K. M., Asuncion, R., & Hussain, S. (2021). Artificial intelligence based handover decision and network selection in heterogeneous internet of vehicles. Indones. J. Electr. Eng. Comput. Sci, 22, 1124-1134.

[43] Hussain, S. M., & Al Saadi, E. A. S. N. (2021). Voice enabled Elevator system. Journal of Student Research.

[44] Al Balushi, I., & Hussain, S. M. (2021). IoT Based Air Quality Monitoringand Controllingin Underground Mines. Journal of Student Research.

[45] Hussain, S. M., & AL HABSI, N. S. N. S. (2021). Protection of foodstuffs in storage warehouses system. Journal of Student Research.

[46] AL-Sakiti, M. K., & Hussain, S. M. (2021). IoT based monitoring and tracing of COVID-19 contact persons. Journal of Student Research.