# Mobile Based Coronavirus Report and Response System for Academic Institutions of Developing Countries

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***Abstract*— In recent days, the medical reporting and response system in Egypt has subjected to great strains, due to the rapid growth of the new Coronavirus epidemic, which has led to a decrease in the efficiency of communications services in the medical sector and a significant increase in response time to emergency calls. To increase the throughput of the medical emergency communication in the educational sector, this paper has been presented. In this paper, a new Coronavirus Report and Response System (CRRS) for academic institutions of developing countries has been proposed. The aim of the proposed (CRRS) is to save lives in educational institutions by improving the emergency communications between the patient member of academic institution and the concerned health agency on the one hand, and making the process of emergency response more efficient on the other hand. The proposed (CRRS) integrates a set of major tools to report and respond to any suspected case of Coronavirus in educational institutions, such as Internet protocols, GPS, WhatsApp platform, Facebook platform, ... etc. The proposed (CRRS) has been evaluated on two levels. In first evaluation level, the system application on various Android smartphones has been evaluated by a number of smartphone owners. In second evaluation level, the system efficiency has been evaluated from different aspects by a number of Android App developers. The evaluation outcomes confirmed the efficiency of the proposed (CRRS), where the proposed (CRRS) worked efficiently on various Android smartphone devices and gained the satisfaction of Android app developers by 97.77%.***

***Keywords*— Coronavirus; Emergency System; Mobile-Health; Android Platform; Social Media Services.**

## I. INTRODUCTION

In the mid-1990s, several developing countries of the world faced series of deaths resulting from the emergence and outbreak of many devastating diseases, such as Yellow Fever, Cholera, Meningitis, Ebola Fever, ... etc. Therefore, the ministries of health in different developing countries asked their World Health Organization (WHO) to develop comprehensive strategies to detect and response to the communicable and non-communicable diseases, which represent the main cause of disability, illness and death [1].

In December 2019, many unexplained cases of pneumonia appeared in the provinces of Wuhan, then spread strikingly fast to various parts of China and different countries of the world.In that time, the medical reports declared that this outbreak backs to a novel Coronavirus whose symptoms are similar to the Symptoms of Severe Acute Respiratory Syndrome CoV (SARS-CoV) appeared in 2003.However, both of them shared the same receptor (Angiotensin-Converting Enzyme), therefore this virus was initially called SARS-CoV-2 [2].

On January 23, 2020, huge numbers of Chinese citizens were infected with the SARS- CoV-2, due to the large flow of people during the Chinese Spring Festival. Then, on January 30, 2020, the WHO has declared this novel disease represents a public health emergency of international concern. Later, on February 11, 2020, the WHO classified this disease as an epidemic and named it Covid-19 epidemic [3].

Covid-19 epidemic is a class of (β) beta Coronavirus [4], which attacks the lower respiratory tract, causing viral pneumonia and also affects other organs such as, digestive system, heart, kidneys, liver and the central nervous system leading to a complete organ failure [5]. Thus, this epidemic can be considered an unprecedented challenge for the whole world[6].

Scientifically, knowing the risk factors for any disease is very important, where it helps to initially control the disease prevalence [7]. Unfortunately, the risk factors for the clinical outcomes of Covid-19 epidemic have not been well identified to date [8,9].Therefore, it has the ability to infect a large number of people in a short period of time compared to its predecessors, where it was able to infect 1000 people within 48 hours only, while SARS took about 4 months to infect 1000 people and Middle East Respiratory Syndrome Coronavirus (MERS-CoV) took roughly two and a half years to infect 1000 people [10].

Generally, the most common symptoms of Covid-19 include: Fever, Cough, Nausea, Vomiting, Dyspnea, Myalgia, Fatigue, Arthralgia, Headache and Diarrhea [11].According to severity factor, the Chinese CDC report classified the clinical symptoms of Covid-19 epidemic into three levels [12]:

- **Mild Disease:** In this level, the patient does not have any symptoms or suffers from mild pneumonia.
- **Severe Disease:** In this level, the patient suffers from dyspnea, tachypnea, disturbance of consciousness and feeding difficulty, food refusal and signs of dehydration.
- **Critical Disease:** In this level, the patient suffers from respiratory collapse, shock and multiorgan failure.

In practice, health care workers play a vital role in managing this crisis, as they constitute the primary line of defense, where they participate in the diagnosis, treatment and care of Covid-19 patients. But, with escalating of Covid-19 crisis curve, health care workers are vulnerable to psychological distress and mental burden, due to the large number of confirmed & suspected cases, massive workload, depletion of personal protection resources, widespread media coverage, lack of specific treatments and the feeling of insufficient support [13].

Once, the clinical trials of suggested medicines to find a vaccine or treatment for Covid-19 epidemic have failed so far, the WHO advised the world's governments to take some preventive measures to reduce injuries scope, including: closing non-essential facilities, travel bans, isolating infected cases, quarantine, prevent mass gatherings, teleworking, distance learning and draw attention to the importance of personal hygiene, such as frequent hand washing and cough etiquette[14].

With, the spread of Covid-19 like wildfire and the lack of capabilities in quarantine hospitals in many countries of the world, the governments took the contact tracking approach to deal with Covid-19 infected cases. In this approach, the normal person who had been near the Covid-19 infected case during his/her injury period is individually quarantined at his home for two weeks and subjected to remote continuous monitoring[15].

Mobile health applications are software tools that installed on smartphone devices to reduce the burden on healthcare systems by providing various health services to all peoples from a distance [16]. With, the proliferation of the Covid-19 epidemic, many mobile applications designed in various countries of the world to eradicate this epidemic. These applications can be classified into five categories [17]:

- **Informational Apps:** These apps provide users with information regarding the Covid-19 outbreak, including latest news, fact sheets, guidelines, … etc.
- **Self-Assessment/Medical Reporting Apps:** These apps help users to perform Covid-19 testing and get the right treatment.
- **Contact Tracing Apps:** These apps help to prevent quarantine breaches by tracking users during home quarantine.
- **Multipurpose Apps:** These apps combine at least two of the previous apps.
- **Other Related Covid-19 Apps:** These apps include a number of Covid-19 apps that cannot be assigned to any of the previous classes. Clearly, it does not include medical applications, but it includes some measures that reduce the spread of Covid-19 epidemic, such as E-commerce apps, that help to avoid overcrowding during purchasing process.

Currently, social media has changed the way people interact and communicate with each other, where it provides several platforms, such as Twitter and Facebook, to allow individuals to share their thoughts and opinions with their contacts [18].Social media is widely used in the education sector, because it has the ability to achieve higher grades in students' positive perceptions towards the learning process than other media tools [19].

The goal of this paper is to develop an Android based system to report and respond to Covid-19 epidemic in academic institutions using social media services. The rest of the paper is structured as follows: Section II, presents an overview of smartphones. Sections III, defines the study problem. Section IV, provides details of the proposed system. In Section V, the obtained results are discussed. Finally, the last section concludes the paper followed by future directions.

## II. Overview of Smartphones

Mobile phones are communication technologies that allow people to communicate with each other in various ways[20].Their roots back to 1973, when Martin Cooper launched the first official mobile phone weighed more than 1 kg and named Motorola Dyna Tac [21].

Historically, the main purpose of mobile phone was interpersonal communication via phone calling and typical text messages. But, with the technological development, mobile users use their phones for satisfying their new needs such as social communication, information seeking, fashion, mobility, accessibility, ... etc. Therefore, mobile phone has become the most widely used device compared to other devices, such as Landline Telephones, IMs and E-Mails [22].

The latest updates of the statistical portal website specialized in the field of statistical reports indicate that, the number of mobile phone users worldwide (in billions) reached 4.15 in 2015, 4.3 in 2016, 4.43 in 2017, 4.57 in 2018, 4.68 in 2019 and 4.78 in 2020 [23].To keep pace with modern mobile generations (3G, 4G, 5G), the mobile phone manufacturers began to design sophisticated mobile phones that support advanced types of mobile services (Multimedia Playback, Twitter, Facebook, WhatsApp, Skype), and these devices were referred to as smartphones [24].

Smartphones are a new class of mobile devices that equipped with many sensors and provide access to various internet services (social networks, transferring files, sharing files, ...etc), in addition to its ability to perform traditional mobile phone functions (voice calls, text messaging, displaying photos, ... etc) [25].

The evolution of smartphone technology is divided into the following three main stages [26]:

In stage-1, the enterprises were the focus of attention. Thus, all features and functions according to the needs of the corporates. In 1993, IBM released the first smartphone under name Simon, then several handheld mobile devices were introduced. In fact, Blackberry was the most famous device of this stage, as it presented many features, including: Email, Internet, Fax, Web Browsing and Camera. In stage-2, the general consumers market was the focus of attention. Thus, all features and functions were designed to fill the customers' needs while cutting costs to attract the largest number of customers. In 2007, Apple introduced the first amazing smartphone and named it iPhone, while Google entered the market of smartphones by introducing its Android operating system at the end of that year. In fact, iPhone was the most notable device of this stage, as it presented many remarkable features, including: Email, Social Website Integration, Playing Multimedia Files, Internet Access, ... etc. In stage-3, the gap between enterprise and consumers requirements has been bridged. In 2008, major smartphone vendors (Apple, Samsung, HTC, Motorola, Nokia, LG, Sony) are focusing on providing distinctive features for both sides. The improvements of this stage include two levels: operating system and device quality.

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At operating system level, the most popular operating systems (iOS, Android, Blackberry, Windows Mobile) have been upgraded. At device quality level, several aspects of the device have been improved, such as display technology, display quality, battery power, user interface, ... etc. In fact, Android plays increasingly prominent role in this stage, because it gives vendors opportunity to build modern devices through the powerful open source Android environment.

Today, smartphones have become the backbone of our daily life, because they help to quickly and efficiently complete our daily activities whether at home or at workplace [27]. Unfortunately, the widespread usage of smartphones has negative effects on human health, as many studies have confirmed that smartphones addiction leads to pain in the fingers, thumbs, arms, wrists, upper extremity, neck, back, as well as causes other problems like headaches, vision and ear problems. Therefore, recent findings recommend that the need to put restrictions on using smartphones and their accessories, where smartphones should only be used when needed [28].

## III. PROBLEM DEFINITION

Currently, with the appearance of the Coronavirus epidemic in early 2020 and its rapid outbreak in different countries of the world including Egypt, several aspects of the society have been negatively affected.

One of the most important sectors affected by this epidemic is the medical sector, as the numbers of suspected and actual injuries are extremely large beyond the imagination of health workers in this sector. Therefore, the emergency requests for medical assistance has increased dramatically.

With the increasing number of the emergency calls to request help with respect to the Covid-19 epidemic, many problems resulted from huge communications burden, such as failed connection, no reply, busy line, ... etc.

As the educational institutions are a part of the real society, their members (students, teaching staff, employees, ... etc) are vulnerable to infection with this serious epidemic, whether during the periods of official working time inside the institution or while their practical daily activities outside the institution.

Based on the above, providing advanced alternatives to report Coronavirus outbreak in educational institutions of Egypt is an urgent need.

## IV. PROPOSED SYSTEM

This section of the paper describes the details of the proposed (CRRS), including: system overview, system flowchart, system development and system GUI.

### *A. System Overview*

The proposed (CRRS) aims to utilize the new features of smartphones technology, such as sensors and location services to increase the efficiency of current Egyptian emergency services in facing the novel Coronavirus pandemic.

The major contribution of the proposed (CRRS) is to develop the operations of making panic request by using various modern methods instead of using traditional methods in which the patient makes the panic request verbally via mobile phone or landline.

The proposed (CRRS) involves three major mobile applications. The first mobile application is used by the patient member of the educational institution. The second mobile application is used by the health agency operator. The third mobile application is used by the health agency responder.

The main steps of the proposed (CRRS) are shown in Fig.1, while the outline of the proposed (CRRS) users is shown in Fig.2.

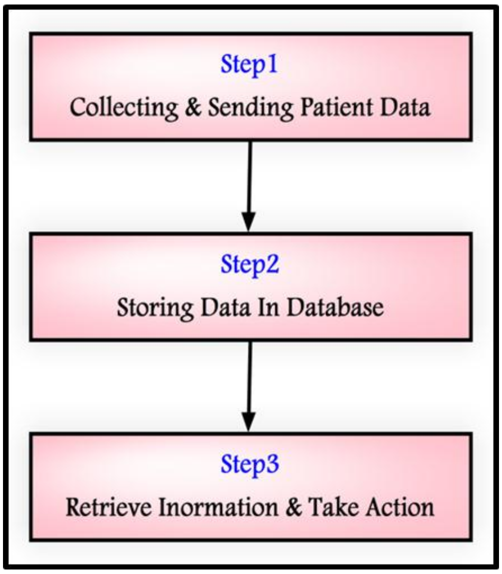


Fig.1: Workflow of proposed CRRS

From the previous diagram it is clear that, the proposed (CRRS) collects the data of educational institution patient member and store it in the database in order to be used later in making the appropriate action by the health agency responder.

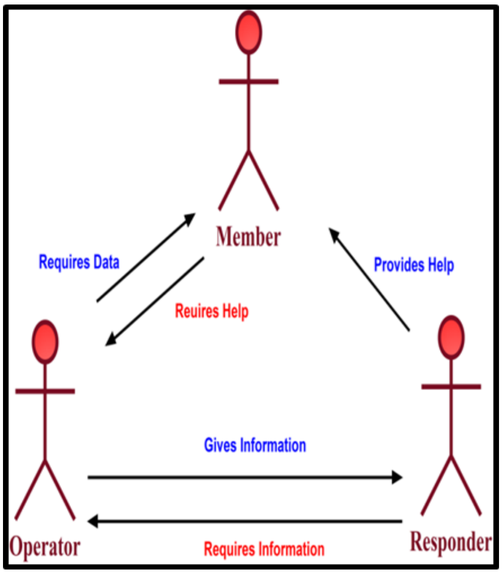


Fig.2: Outline of proposed CRRS users

From the previous diagram it is clear that, the users of the proposed (CRRS) are classified into three categories as follows:

1) **Member:** The member is the sick person who requests the assistance through the proposed (CRRS).

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2) **Operator:** The operator is the person who is contacted for help.

3) **Responder:** The responder is the person who will provide the immediate help to the sick member.

*B. System Flowchart*

Although the three applications covered by the system include many operations, the common major operation among these three apps is the process of reporting infection with Coronavirus and taking the proper action.

The basic steps for receiving the operator the emergency request from the patient member and taking the appropriate aid by the agency responder are shown in Fig.3.

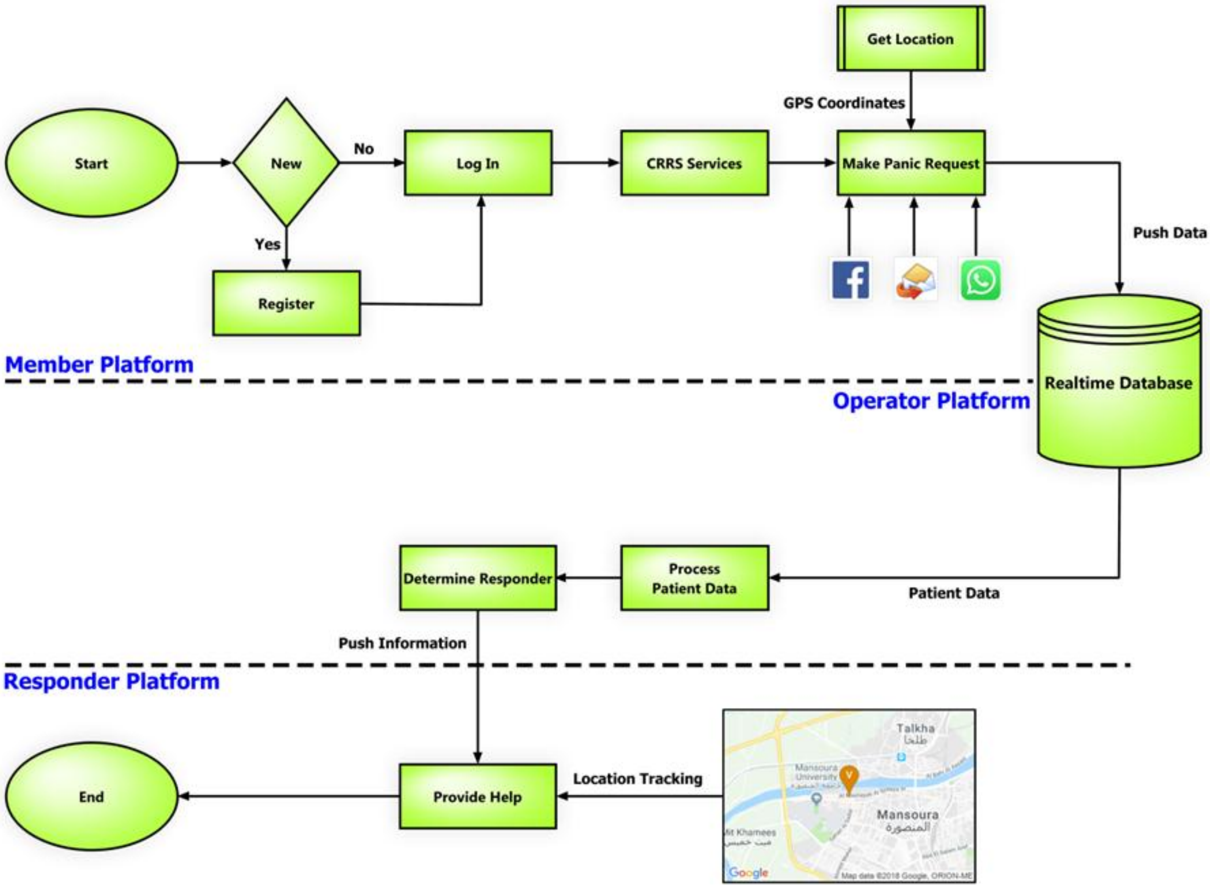


Fig.3: Flowchart for requesting CRRS help service.

From the above diagram, when the patient member of the educational institution launches the first proposed application, the registration test is performed to check if the member already exists in the database or not. If the patient member is new, the first proposed application moves the patient member to the registration process; otherwise the registration step is ignored and the first proposed application moves the patient member directly to the login process, which uses Two Factor Authentication (2FA) mechanism. In the 2FA, the patient member is asked to enter his/her mobile phone number. Then a secret code is sent automatically via SMS to his/her mobile number to be verified. If the patient member resends the secret code back correctly, a valid authentication occurs and the patient member proceed the next step to make the panic request. In this process, the first proposed application firstly determines the latitude and longitude of the patient's member location to be used later in the tracking process of the patient member. Secondly, the panic message is sent either as a text message via internet protocols or sent as a media message via social media platforms, such as WhatsApp platform or Facebook platform. After that, all the data of the patient member is stored in the realtime database to become available for use in the operator and responder platforms.

When the agency operator launches the second proposed application, the health agency operator retrieves the data of the patient member from the database, handles the necessary data and determines the appropriate responder to deal with the received panic request. After that, the agency operator sends the patient member information to the responder platform to be used in providing help service.

Ultimately when the agency responder launches the third proposed application, the health agency responder receives the major patient's information specified by the agency operator, including the GPS coordination, which will displayed on a graphical map to enable the responder to reach the Geolocation of the patient member and provide him with the immediate assistance.

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*C. System Development*

To develop the prototype of the proposed (CRRS), the Android development environment was used, because it has a series of useful features for rapid development. In the proposed (CRRS) development phase, an Android smartphone device (Samsung Galaxy Note 5) was used. However, any other smartphone device can be used during the development and implementation phase of the proposed (CRRS), if satisfies the following criteria:

- **Android Version: 4.4 (KitKat) or Higher**
- **Internet Enabled**
- **GPS Enabled**

Practically, the proposed CRRS development process depends on a number of software tools. The most important of those are:

- **(Android Studio IDE):**

This tool was used to develop different Apps of the proposed (CRRS) to run on various smartphone devices.

- **(Google Firebase Realtime Database Apps):**

This tool was used to store all the system data in a cloud-hosted database as JSON and make this data available in real-time to every connected client.

- **(Internet Protocols):**

This tool was used to directly transmit the panic request of the patient member to the healthcare agency as a text message from inside the system via internet transmission protocols.

- **(Facebook Platform):**

This tool was used to transmit the panic request of the patient member as a media message from Facebook messenger of the patient member to its counterpart in the healthcare agency.

- **(WhatsApp Platform):**

This tool was used to transmit the panic request of the patient member as a media message from WhatsApp messenger of the patient member to its counterpart in the healthcare agency.

- **(Google Map Platform):**

This tool was used to enable the responder in tracking the patient member based on the latitude and longitude (lat/long) coordinates of his/her Geolocation location.

*D. System GUI*

To provide a way to interact with the proposed (CRRS), a Graphical User Interface (GUI) of the system operations is designed. Since the proposed (CRRS) consists of three layers (patient member layer, health agency operator layer and health agency responder layer), and each layer includes a large number of graphic screens, we will only display the key screens of each layer in the following subsections:

**1) Member Layer**

In this layer, the patient member of the educational institution has the right to perform many operations, such as make a panic request, follow updated statistics of Covid-19 pandemic, request help from Covid-19 pandemic, ...etc. The main screen of the educational institution patient member is shown in Fig.4.

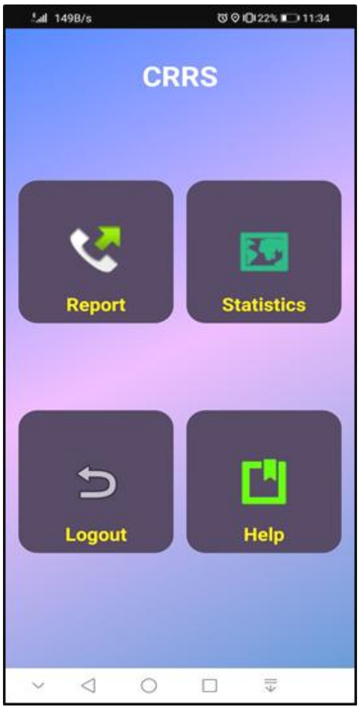


Fig.4: Screenshot for main screen of patient member

From the member main screen, when the **Report** button is pressed, the educational institution member moves to the panic report screen, which enables the member to report infected cases of Coronavirus in his/her educational institution using various reporting methods as shown in Fig.5.

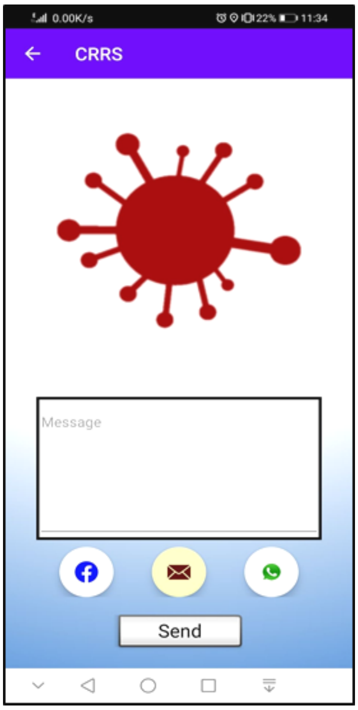


Fig.5: Screenshot for screen of making panic request

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In the above screen, the educational institution member firstly writes the panic message in the allocated textbox, and then chooses the sending method from one of the following methods:

- **(Sending Via Internet Protocols):**

In this method, the panic message is sent through the traditional internet transfer protocols.

- **(Sending Via Facebook):**

In this method, the panic message is sent through Facebook account that used on member's smartphone device.

- **(Sending Via WhatsApp):**

In this method, the panic message is sent through WhatsApp account that used on member's smartphone device.

In the above screen, once the member presses the **Send** button, the system gathers and stores data of the patient member into the database in order to be used on operator and responder platforms.

From the member main screen, when the **Statistics** button is pressed, the educational institution member moves to the World Worldometers Website screen, which enables the member to follow the latest statistics of Covid-19 outbreak over all the world, including Egypt as shown in Fig.6.


Fig.6: Screenshot for screen of Covid-19 statistics

From the member main screen, when the **Help** button is pressed, the educational institution member moves to the World Health Organization website screen, which enables the member to obtain scientific and medical advice for avoiding the outbreak of Covid-19 pandemic as shown in Fig.7.

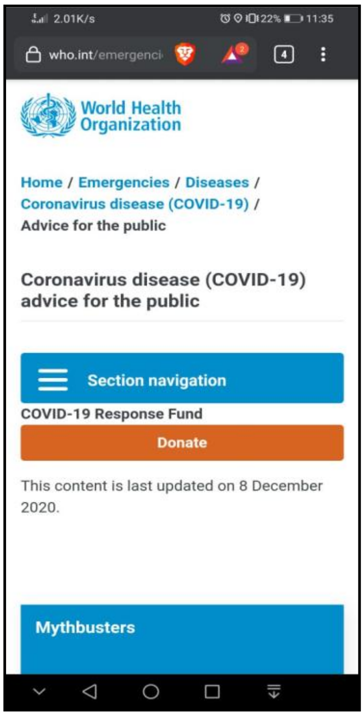


Fig.7: Screenshot for screen of Covid-19 help

From the member main screen, when the **Logout** button is pressed, the member side of the proposed CRRS is closed.

## 2) Operator Layer

In this layer, the healthcare agency operator has the right to perform many operations, such as view data of the patient members, receive panic requests, get GPS coordinates of the patient members' location, ... etc. The main screen of the healthcare agency operator is shown in Fig.8.


Fig.8: Screenshot for main screen of health agency operator

From the operator main screen, when the **Reports** button is pressed, the healthcare agency operator moves to the reports screen, which enables the operator to view the latest Covid-19 cases that received by the system and each case is classified as in progress, infected, quarantined, recovered or died as shown in Fig.9.

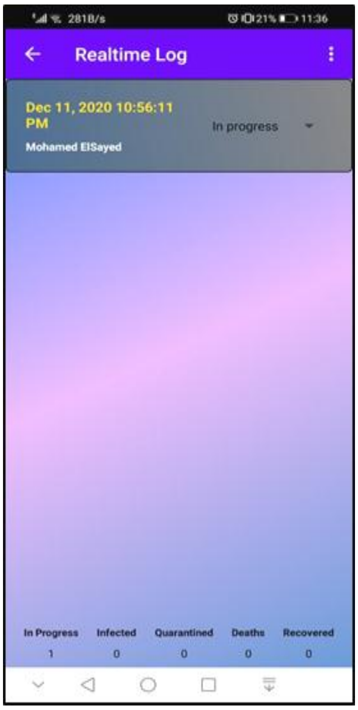


Fig.9: Screenshot for screen of Covid-19 recent reports

In the above screen, once the operator clicks twice on one case of the received cases, the details of the selected case are displayed as shown in Fig.10.


Fig.10: Screenshot for screen of Covid-19 case details

In the above screen, once the operator presses the **Send To Responder** button, the system automatically displays a list of the nearest registered responders to the patient member's location and then transfers the case data to the selected responder as shown in Fig.11.


Fig.11: Screenshot for screen of Covid-19 nearest responder

From the operator main screen, when the **History** button is pressed, the healthcare agency operator moves to the history screen, which enables the operator to view all Covid-19 reports that have been registered over the system and each case is classified as in progress, infected, quarantined, recovered or died as shown in Fig.12.


Fig.12: Screenshot for screen of Covid-19 history

From the operator main screen, when the **Settings** button of the operator main screen is pressed, the system operator moves to the control panel screen, which enables the operator to change the system settings, such as language of the application, WhatsApp number of health agency, Facebook account of health agency, ...etc.

Finally from the operator main screen, when the **Logout** button is pressed, the operator side of the proposed CRRS is closed.

### 3) Responder Layer

In this layer, the healthcare agency responder has the right to perform many operations, such as display details of the Covid-19 patient members, track location of Covid-19 patient member, provide a quick help for Covid-19 patient members, ... etc. The main screen of the healthcare agency responder is shown in Fig.13.


Fig.13: Screenshot for main screen of health responder

From the responder main screen, when the **Inbox** button is pressed, the healthcare agency responder moves to the Responder Inbox screen, which displays all Covid-19 cases that assigned by the operator to a specific responder as shown in Fig14.


Fig.14: Screenshot for screen of responder inbox

In the above screen, once the responder presses the **Info** button, the system displays the details of the current Covid-19 case as shown in Fig.15.

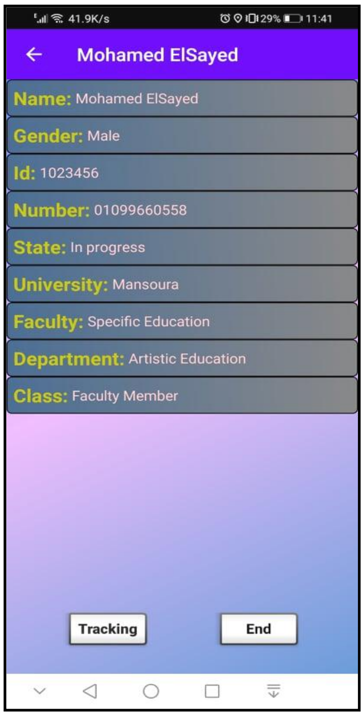


Fig.15: Screenshot for screen of case details

In the above screen, once the responder presses the **Tracking** button, the coordinates of the patient member's location appear as an overlay on the Google Map to help the responder in tracking the Covid-19 patient member. On the other hand, in the above screen once the responder presses the **End** button, the current case is pulled from the list of the

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patient Covid-19 cases registered for the current responder by the agency operator.

Finally, from the Responder main screen when the **Logout** button is pressed, the responder side of the proposed CRRS is closed.

## IV. PERFORMANCE EVALUATION

To justify whether the proposed (CRRS) achieved its initial goals or not, it was evaluated on two levels. The aim of first evaluation level was to ensure that, the proposed (CRRS) runs on various types of Android phones without any errors. In this level of evaluation, a number of Android smartphone owners who have a good experience of using smartphone devices were asked to test the proposed (CRRS) on their Android phones.Then, the test result was classified as either Passed, which means that the proposed system worked fine or Failed, which means that the proposed system did not work at all or partially worked with some problems. The findings of this evaluation level were recorded, organized and presented in Table.1.

TABLE 1. FINDINGS OF TESTING THE PROPOSED CRRS ON DIFFERENT ANDROID PHONES

| Android Phone | Result |
|---|---|
| Alcatel Pixi 3 | Passed |
| Asus ZenFone 4 | Passed |
| Acer Liquid Z500 | Passed |
| Huawei G629 | Passed |
| HTC One Max | Passed |
| LG Optimus G | Passed |
| Lenovo A6600 | Passed |
| Motorola Moto X | Passed |
| Samsung Galaxy Not 5 | Passed |
| Sony Xperia E3 | Passed |

From the findings shown in the previous table, we conclude that, the proposed (CRRS) was compatible with different smartphone devices that run on Android OS regardless the brand of the product, specifications, attributes, ... etc.

After the proposed (CRRS) passed the first evaluation level, it moved to the second evaluation level, which was mainly aimed at finding the strength and weakness of the proposed (CRRS). In this level, the proposed (CRRS) was presented to a number of Android App developers along with the feedback form, which includes a set of Likert–scale questions that focus on system features and functions.

In this level of evaluation, each Android App developer was asked to fill out the evaluation form and write his/her satisfaction percentage with the proposed (CRRS). The outcomes of the second evaluation level were recorded, organized and analyzed through descriptive statistics as depicted in Table 2.

TABLE 2. OUTCOMES OF ANDROID APP DEVELOPERS' SATISFACTION PERCENTAGE WITH THE PROPOSED CRRS

| No. Evaluator | Satisfaction Percentage [%] |
|---|---|
| EVAL-1 | 97.66 |
| EVAL-2 | 96.34 |
| EVAL-3 | 99.45 |
| EVAL-4 | 98.14 |
| ..... | ..... |
| ..... | ..... |
| EVAL-N | 98.14 |
| **Overall Average** | **97.77** |

Generally, it was clear that from the previous results there was a significant match for the acceptance percentages of the proposed (CRRS) among the Android App developers participated in the second evaluation level. The detailed-part of the above results indicated that, despite the percentage of system satisfaction differed from one Android App developer to another, the majority of Android App developers tended to give the proposed (CRRS) a satisfaction percentage greater than or equal to 97%.On the other hand, the summarized-part of the above results indicated that, the overall percentage of developers' satisfaction with the proposed (CRRS) reached 97.77%.

By comparing the obtained overall satisfaction percentage with its predecessors in scientific publications, we found that the achieved overall satisfaction percentage is extremely acceptable and encouraging. Therefore, we recommend expanding the application scope of the proposed (CRRS) in the future to report, and respond to the infected cases of Coronavirus in the actual environment of educational institutions of Egypt.

## V. CONCLUSION AND FUTURE WORK

In recent days, the world faces the fierce Covid-19 pandemic which attacks everyone regardless of gender, language, race, nationality, class, religion, belief, ... etc. In light of the exceptional nature of the Covid-19 pandemic, the communication technologies in emergency medical systems are facing enormous burdens, which lead to large numbers of missed calls that caused many deaths in all sectors of the society, including education.

With the current technological advancement, it has become necessary to make significant changes in methods of reporting and responding to the Covid-19 pandemic in various sectors in general, and in educational sector in particular. From this perspective, this research paper utilizes the evolution of smartphones technology to develop a Coronavirus Report and Response system in educational institutions based on major tools, such as Internet Protocols, GPS, WhatsApp Platform, Facebook Platform, ... etc.

The performance of the proposed (CRRS) has been evaluated at two levels. In level-1, the system application on several Android smartphone devices has been tested by a number of smartphone owners. In level-2, the actual functionality of the proposed (CRRS) has been tested by a number of Android App developers.

The results of the first evaluation level confirmed that, the ability of the system to work on different Android phones efficiently, while the results of the second evaluation level showed that, the overall percentage of developers' satisfaction with the proposed (CRRS) was 97.77%.

Future work focuses on developing the proposed (CRRS).The development plan aims to implement a smart Coronavirus Report and Response System that will perform panic request automatically. The developed system will use a wide range of garments equipped or wearable devices with embedded medical sensors to monitor the main operations of the human body, such as blood pressure, glucose level, heart rate, … etc.In addition, it will regularly track the Coronavirus symptoms, such as body temperature, breath level, cough, sense of taste and smell, … etc. Once the developed system detects a defect in the health of the educational institution member, it will make an emergency request automatically and store the data of the patient member in the database to be used later in other platforms.

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