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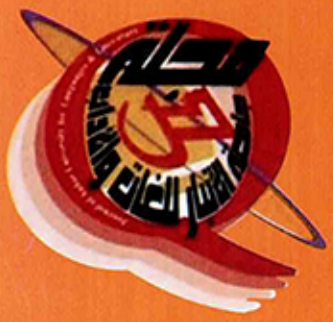

مجلة جامعة الأنبار للغات والآداب

مجلة
جامعة الأنبار للغات والآداب

مجلة علمية محكمة تصدرها جامعة الأنبار

عدد خاص ٢٠٢١

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مجلة جامعة الانبار للغات والآداب

مجلة علمية فصلية محكمة تعنى بدراسات وأبحاث اللغات الحديثة وآدابها

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ضوابط النشر

١-مجلة جامعة الأنبار للغات والآداب مجلة فصلية علمية محكّمة تصدر عن جامعة الأنبار بواقع عددين في السنة، تنشر البحوث من الجامعات والمؤسسات العلمية المحلية والعربية والأجنبية، في الآداب واللغات الحية.

٢-يقدم الباحث البحث مطبوعًا في نسختين يكون حجم الخط (١٤) للمتن و(١٢) للهوامش الختامية بخط (simplified Arabic) للبحوث باللغة العربية، وبخط (Times New Roman) للغات الأخرى وبمسافات منفردة، وبمسافة (٢.٥) من جميع الجهات.

٣-تكون البحوث المقدمة للنشر مكتوبة وفق المناهج العلمية البحثية المتعارف عليها ويرفق مع كل بحث مستخلصين باللغتين العربية والانجليزية بحدود (المائة)كلمة لكل منهما مع الكلمات المفتاحية.

٤-ألّا يزيد عدد صفحات البحث على (٢٥) صفحة مع الأشكال والرسوم والجداول والصور والمراجع، وتستوفى مبالغ إضافية من الباحث لما زاد على ذلك، أما الملاحق فتُدرج بعد ثبت المصادر والمراجع، علمًا أنّ الملاحق لا تنشر وإنما توضع لغرض التحكيم فقط.

٥-يرجى طبع الآيات القرآنية وعدم نسخها من المصاحف الالكترونية، مع مراعاة دقة تحريكها لغويًا.

٦-تعرض البحوث على محكمَين من ذوي الاختصاص لبيان مدى أصالتها وصلاحيتها، ولا تعاد البحوث إلى أصحابها سواء نشرت أو لم تنشر.

٧-يحصل الباحث على نسخة واحدة من العدد الذي ينشر فيه بحثه.

٨-ما ينشر في المجلة يعبر عن وجهة الباحث (الباحثين)، ولا يعبر بالضرورة عن وجهة نظر المجلة.

٩-تحتفظ المجلة بحقوق نشر البحوث الحصرية وفقًا لقوانين حقوق الطبع والملكية الفكرية الدولية ولا يجوز النقل أو الاقتباس أو إعادة النشر لأي مادة منشورة في المجلة إلّا بموافقة خطية من المجلة.

المحتويات

كلمة هيئة التحرير

بسم الله الرحمن الرحيم

رئيس تحرير المجلة

COVID-19 AND TECHNOLOGY: A REVIEW ON THE IMPACT OF COVID-19 ON TECHNOLOGY DEVELOPMENT

كوفيد-١٩ والتكنولوجيا: مراجعة عن تأثير كوفيد-١٩ على تطور التكنولوجيا

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Abstract
In November 2019, a respiratory virus, SARS-CoV 2 or severe acute respiratory syndrome coronavirus 2, expanded globally from the city of Wuhan, China. In March 2020, the World Health Organization (WHO) regarded the SARS-CoV 2 virus as a global pandemic. Since then many government efforts across the world focused on prevention and containment of the virus. Countries which had low COVID-19 infection rates share common strategies based on early surveillance and testing, and contact-tracing. These strategies has depend on using specific technologies and adopting them in health care and early detection of the disease; so that the pandemic has been carefully and critically managed and planned. Many researchers and innovators around the world have worked hard to develop many important digital technologies that facilitates people life during the pandemic and quarantine and to help fight against the virus. In this paper, a review performed to describe the existing technologies that occurred during Corona Virus Disease 2019 (or COVID-19). In particular, some technologies, whether it is software or hardware, are based on tracking COVID-19, others were based on fighting it whereas some were based on support organizations in processing data and giving new insights to fight that virus. The review of this paper highlights and represents a picture of the current technologies

which with a distinctive impact in this period and had a crucial role in keeping the society work in the time of quarantines and lockdowns.

Keywords: SARS-CoV 2, WHO, COVID-19, FCC, UV

الملخص

في شهر نوفمبر ٢٠١٩ ، انتشر فيروس الجهاز التنفسي ، SARS-CoV 2 أو فيروس كورونا ٢ المتلازمة التنفسية الحادة الوخيمة ، عالميًا من مدينة ووهان ، الصين. في شهر مارس ٢٠٢٠ , اعتبرت منظمة الصحة العالمية (WHO) أن فيروس SARS-CoV 2 جائحة عالمية. منذ ذلك الحين ، ركزت العديد من الجهود الحكومية في جميع أنحاء العالم على الوقاية من الفيروس واحتوائه. ان البلدان التي لديها معدلات إصابة منخفضة بـ COVID-19 تشترك في استراتيجيات مشتركة تعتمد على المراقبة والاختبار المبكر وتتبع الاتصال. وقد اعتمدت هذه الاستراتيجيات على استخدام تقنيات معينة واعتمادها في الرعاية الصحية والكشف المبكر عن المرض ؛ حتى تتم إدارة الوباء والتخطيط له بعناية ونقد. عمل العديد من الباحثين والمبتكرين حول العالم بجد لتطوير العديد من التقنيات الرقمية المهمة التي تسهل حياة الناس أثناء الوباء والحجر الصحي وللمساعدة في مكافحة الفيروس. في هذا البحث ، تم إجراء مراجعة لوصف التقنيات الحالية التي حدثت أثناء مرض فيروس كورونا ٢٠١٩ (أو COVID-19). تعتمد بعض التقنيات ، سواء كانت برامج أو أجهزة ، على تتبع COVID-19 ، بينما استند البعض الآخر على محاربته بينما كان بعضها يعتمد على توفير الدعم في معالجة البيانات وإعطاء رؤى جديدة لمكافحة هذا الفيروس. ان المراجعة في هذا البحث يبرز ويمثل صورة واقعية للتقنيات الحالية التي كان لها تأثير فعال في هذه الفترة وكان لها دور حاسم في الحفاظ على عمل المجتمع في زمن الحجر الصحي والإغلاق.

1. Introduction

People's way of life had changed abruptly since the virus considered as a pandemic in March and begun spreading throughout the whole world. By a month later, most of people were at home due to the quarantines. They forced to use tools and specific programs, like Zoom and FCC (Free Conference Call), to keep working and stay in touch with their colleagues. Also almost all the necessary stuffs for living were bought, by most of people, online and shipping them to their door. Since March and after the pandemic spread, many new technologies and software programs were found and produced in order to help people

reduce the effect of quarantine and make things easier for them and to reduce the transmission of COVID-19, especially for the people who working in the medical field which they keep going to work to treat the infected patients and help in fighting the disease. Some software programs were spread to help in early detection of disease symptoms whereas other were found to track the virus appearance. Many devices also designed and produced to perform tasks that the human cannot do because they are not susceptible to COVID-19, and can continue working during the pandemic without any risk to safety and health. Example of such devices are automatic disinfection device of affected areas, sterilization device of people before entering any place and even food delivery robot. The importance of technology during the pandemic is indisputable and has never been more apparent.

2. The most effective technologies

COVID-19 is still present and out of control, since there is no vaccine for it yet, so that there is always a certain amount of concern and fear from infection by either contact with contaminated objects and surfaces or contact with infected people. Though contracting the virus from objects and surfaces is less risky than from direct contact with an infected person; people will always desire to reduce this risk as much as possible. This begin to see that a persistent and urgent need to prevent infection by finding methods for sterilization and fogging. These technologies will be presented under two topics (hardware technologies and software technologies).

2.1. Hardware Technologies

2.1.1. Ultraviolet room disinfection device

A room disinfection device, has the shape of lamp, is based on using radiation of Ultraviolet (UV) and designed for the rooms. It can be controlled remotely using any Android mobile. Also it has a detection security system that the system can be turned off automatically. The system, shown in figure 1, is able to generate very high UV dosages by adding more lamps and thus sanitize larger rooms. The method of disinfection affects a very large numbers of microorganisms beside its

advantages respect to the safe chemical sanitizing method and its low cost and speed [Bentancor, 2018]. In spite of that the device is first produced in 2018 but the uses of UV radiation lamp is widely spread and developed extensively to fight COVID-19. It also improved to be controlled more intelligently, so that the disinfection time can be customized with smooth remote control and automatic safe disinfection task without any skin damage [Alibaba, 2020].

Figure 1. UV-C device

2.1.2. Automatic Antivirus Sterilization and Isolation Equipment

This type of devices are used specifically in hospitals and source of infections. It isolates COVID-19 infected patients and disinfect the place from the virus and bacteria (killing rate 100%) and thus cleanse the working environment of patients and medical staff. As a result, the treatment of the infected people will be adjusted and the full recovery period will be shorten. Examples of such equipment are Ceiling Suspended Model (shown in figure 2) which set up above the patient's bed to improve its recovery and environment [KLC Cleantech Co., 2020], and Mobile Cabinet Model (shown in figure 3) which are set up in the room to capture and eliminate the virus and fully sterilized the room [KLC Cleantech Co., 2020].

Figure 2. Ceiling Suspended Model

Figure 3. Mobile Cabinet Model

2.1.3. Atomization Intelligent Door

Antibacterial and disinfection atomization door (also refer as disinfection door hereinafter) is a full protective machine (shown in figure 4), whether based on the same function of UV lamp or use disinfectant spray, especially in crowded places such as hospitals, restaurants, schools, shopping-malls and airports. The UV based doors use a sterilization method that based on the disinfection solution which was adopted in the food grade section 720° Omni-directional. They avoids respiratory discomfort with reasonable-layout that sterilized without contact with people passing through. They also detect people temperature and will alert when someone temperature is high [KLC

Cleantech Co., 2020][Indiamart, 2020]. Some intelligent doors are using a disinfectant spray to sterilize the human-body. They also remind someone to wear face mask if he was not wearing one[Superhouse, 2020].

Figure 4. Atomization Intelligent Door

2.1.4. Air Cleaner Card

This type is considered as a new and advanced preventive method for eliminating all microbial organisms circulating in the air. It is a portable card that comes in the size of a personal identification card that can be used as a preventive product to protect against air microbes, especially to prevent the emerging Corona virus, as well as to prevent infection and diseases transmitted through the air, laboratory studies have proven the efficiency of this card in killing viruses and all Types of bacteria, fungi, bacterial germs, and so on. This card, shown in figure 5, contains a safe and non-toxic component of sodium chloride that does not cause harm to the human body. This card contains stomata during the process of use, the stomata should be exposed to the outside, not be covered for a long time, and do not use in place with rain, water, sweat, high temperature or direct sunlight. Also, it should not be used near colored cloth due to the effect of bleaching, nor should it be placed in a pocket. And it must be taken off when changing clothes or going to sleep. And do not use it near metal as it will corrode the metal. And it should not touch the skin directly. The inner package must not opened. In case

of spillage, please wipe and clean it immediately. And it is not edible, so please keep this product in a cool dry place out of the reach of children and pets. Children should be used under adult supervision [Hebei Yaluojia Biological Tech. Co., 2020].

Figure 5. Air cleaner card

2.1.5. Smart watch

The new Corona virus has infected more than 15 million people and killed more than 600,000 people around the world. Its symptoms included coughing, fever, and loss of sense of smell and taste. Big technology companies such as Fitbit, Huawei, and Apple of the United States presented their smart watches to predict symptoms of Corona virus so that the bearers of this watch can know the level of blood oxygenation, which is one of the most important symptoms of infection with this virus (see figure 6) [Chinadaily, 2020]. Fitbit smart watches work in creating an algorithm that can detect a person's infection with this virus before symptoms begin by using physiological signs like breathing rate, heart rate and heart rate variability [Wired Co., 2020][Fortune, 2020]. Apple watches users can monitor their sleep and activity patterns, heart rate, blood oxygen saturation levels and other biomarkers. Findings suggest that wearable can detect nearly 50% of COVID-19 cases one day before participants report the onset of symptoms [Usatoday, 2020][Apple Inc., 2020].

Figure 6. Smart watches

2.1.6. Delivery Robots

To reduce the spread of the Covid-19 virus, Technology and artificial intelligence companies in China have made to contribute to the fight against Corona virus. By using robots (shown in figure 7) in order to provide food to patients in hospitals. Where the Chinese company Keenon Robotics in Shanghai has produced more robots that serve patients in major hospitals in Wuhan, which is the epicenter of the spread and outbreak of the Corona virus. Where he placed holes on the robot's head that sprayed hydrogen peroxide, in addition to the presence of nine ultraviolet light bulbs in the abdominal area. In addition to the robot carrying out the task of delivering food and medicine to those infected with this virus, the robot can carry out many other tasks such as sanitizing areas in which humans and machines reside with the ability to automatically bypass any obstacles. The robot carries a touch screen that allows operators to give instructions and monitor battery power percentage. These robots can help doctors to communicate with infected patients remotely by video, monitor their health, provide treatment for them, and safely deliver medical goods in hospitals. As it became a safe alternative that helps limit the spread of this virus. There is another type of robots called a small service robot, this robot is designed to do food delivery service to people, to reduce the spread of this virus, this robot has built-in cameras around it, which provides the robot with a 360-degree view, This robot has wheels so that it can climb barriers by lifting these wheels one by one until they make their way on the sidewalk and it

can also avoid collisions with people[Nikkei Asia, 2020][The Guardian, 2020].

Figure 7. Delivery robots

2.2. Software Technologies

2.2.1. Covid Tracker app

People all over the world must get used to the idea of the Corona pandemic and that it will remain until the vaccine is discovered. Therefore, methods have been searched to control this epidemic until a vaccine is found against this virus. And the best way is to use software to create an application that allows individuals in low-resource countries to know if they have contracted the Coronavirus, and it is mentioned that this application will ask people about symptoms and provide instructions on whether they have been infected with this virus as well as special features of this application, including Inform people whether they should undergo screening based on symptoms and record their movements to provide more efficiency in tracing contacts of infected people [Gov.ie, 2020].

2.2.2. COVID-19 Exposure Notifications System

This app helps understand whether the person has been exposed to someone who had already reports having COVID-19 infection. All persons which use this app must share their information especially if they were infected with Corona virus so that to alert the people he has been in contact with. This app also notifies people if an infected person is near to them [Android Help, 2020].

2.2.3. OpenWHO

It is WHO's interactive-platform (accessed through computer or mobile phone) that provides online courses and knowledge transfer to large numbers of possible responders so that to improve the response for health emergencies. These courses contain many important topics about the latest scientific know-how operation and offer discussion-boards to all people from anywhere [World Health Organization, 2020].

2.2.4. ALHOSN UAE app

ALHOSN UAE app is COVID-19 testing application for authorizing health. It produced by the Ministry of Health and Prevention in the United Arab Emirates (UAE). With this app, all people can help in stopping COVID-19 spread and maintain their families and friends safe. It is Bluetooth based app that determine if the person's phone is near to another phone that also has the app installed. Both phones exchange their IDs and store them in an encrypted form on both phones. Using these IDs, it can easily identify and alert people at risk of COVID-19 infection [Google Play, 2020].

2.2.5. Home Quarantine System (HQR)

HQR is a smartphone-application that continuously monitors health status of COVID-19 patients which are placed in home quarantine. The people with home quarantine, who had returned homes recently from abroad, are confirmed to be infected by COVID-19 or were in-contact with a COVID-19 infected person. The purpose of this app is to provide help to the health care agencies by facilitating people monitoring, during home-quarantine, and their condition. Home-quarantine monitoring is verified, automatically by the system at random timing, by a mandatory request sent to the person via SMS. This process is simple: the identity of the person can be verified using face recognition and the location data is derived from his mobile-device [Google Play, 2020].

3. Results

The COVID-19 fast spreading proved to be an unprecedented-disaster in most countries including China, USA, Italy, Germany and

Iraq. It will always have a tremendous long term impact on all the world and on the society. The biggest effect will be noticed is its effects on the technology and its future. This influence was clear and obvious in the technologies invented and found. The presence of the virus and its rapid spread have led people to adapt and try to use alternatives to work, entertainment, and conduct business without leaving their homes. This issue is nothing but proof of how strong people are and how quickly they respond to circumstances and challenge them, no matter how severe these circumstances are. Also it highlights the weakness for the community in order to learn the lesson and know what to do in any future global pandemic.

4. Conclusions

In this paper, a review on the technologies (hardware or software) which appeared in the time of COVID-19 is presented. These technologies had the biggest impact in containing the virus, eliminate it, sterilize places, especially in hospitals, and support medical staffs in their job. Other technologies are used in tracking the virus whereas other alerts people whenever the symptoms are detected so that they can be treated earlier and avoid any complication of the disease. This review may help the researchers and technology developers to improve existing devices, develop them, or add new features to them, thus helping the community to fight the Corona virus and reduce its transmission. It also led to pinpoint all the benefits and consequences related to these technologies so that to enhance the disadvantages of the technology.

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