Surveillance during COVID-19

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Short communication

The coronavirus was initially discovered in China's Hubei province, in the city of Wuhan. Then, when the virus expanded more, the hotspots of infection and mortality from it shifted. Because of this unprecedented threat, several nations in Europe, North America, South America, and Asia have experienced significant healthcare problems. The government of these states' lack of preparation has exacerbated the problem. As a result, a prognosis of the virus's spread to any place would undoubtedly aid authorities in acting proactively and taking the appropriate actions. AI algorithms can analyse the virus's geographic distribution and pinpoint clusters and hotspots [1]. This data may be used to find susceptible locations in various regions [2, 3]. Individuals have been monitored using AI-powered tools such as contact tracking apps to identify risk and anticipate the disease's future course of action. [4,5] showed how to apply machine learning to analyse time series using a Nonlinear Regressive Network to predict viral transmission, which can help with forecasting for the following days. Manual contact tracing necessitates the participation of thousands of skilled professionals who must identify the sick, follow them, and assist others to avoid being infected. In contrast, an AI-powered automated contact tracking system may be customised to alert a person if they are in close proximity to sick people. By analysing epidemiological data quicker than the usual medical data reporting method, AI may be utilised to detect the COVID-19 transmission networks and select the most effective control actions [6,7]. The study showed the use of AI to scale the pandemic epidemic in multiple locations using the SEIR (Susceptible, Exposed, Infectious, and Recovered) model. The Guangzhou Gosunch Robot Company [8] has already deployed a 5G patrol robot in China to monitor the COVID-19 preventive measures. The robot, which is equipped with infrared thermometers, can scan up to ten individuals within a 5-meter radius for excessive temperatures. The creation of this IoT-based application is aided by the MIC-770, an IoT edge computer (Intel 8th gen Core I processor, GPU iModule-MIC-75G20), and five high-resolution cameras. Contamination is increased when people are involved in prototype testing. As a result, robots may be a safer option than humans. Apple and Google are working together to build a contract tracing tool for the iOS and Android platforms. This contact tracing application's prototype has been tested at MIT. Robots equipped with the necessary sensors boosted the signals. The Bluetooth range was tested [9]. One of the most efficient means of decreasing COVID-19 transmission is through social separation. Social distance may also be monitored using various AI-enabled and vision-based robotic technologies [10]. A social distance monitoring system may be built using AI-powered smartphone apps, wearable devices, and CCTV cameras. It should be set up to alert people in the workplace and public places when they break the principles of social distance.

It proposes a deep learning-based autonomous social monitoring system that recognises people in surveillance videos and separates them from the backdrop. This may be used to track social separation in public spaces. COVID-19 patrol robots are fully autonomous or teleoperated mobile robots that may be used for a variety of purposes during COVID-19. It has recently been modified to replace human patrols, particularly in high-risk locations (i.e., high crime areas or highly infected zones). They can record live photographs and report odd or suspicious events to the right authorities in the quickest time possible because they are equipped with high-resolution cameras and the fastest communication modules. Patrol robots can move autonomously to the nearest charging station, recharge, and return to the serving area, allowing them to conduct monitoring services around the clock. Patrol robots were employed to conduct inspections with law enforcement officials during the COVID-19 outbreak. They also keep track of body temperature, facial mask use, and social isolation, and warn the appropriate authorities in the event of a possible hazard, such as a high temperature or the absence of facial masks. They may also be used for real-time scenario monitoring, autonomous decision making, behavioural control, and engagement when combined with AI, cloud computing, and big data processing capabilities. When the robot detects an unusual or suspicious incident, such as the lack of facial masks or a high body temperature, an alarm is transmitted to the appropriate authorities, who will take the required steps to deal with the situation. Singapore's government has deployed a four-legged robot dubbed "Spot" designed by Boston Dynamics to patrol its local parks to ensure social separation among visitors. The spot is teleoperated, and it uses mounted cameras to estimate the number of visitors and broadcast a pre-recorded message on keeping safe distances between visitors. A four-wheeled robot, PGuard, has been placed in Tunisia's capital's main streets to check adherence to the coronavirus lockdown. PGuard approaches pedestrians with a thermal camera and Lider technology, ask why they are disobeying lockdown, and scans their identity documents if required so that the appointed authorities may examine them.

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