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Towards Multimodal Equipment to Help in the Opinion of COVID- 19 Using Machine Learning Algorithms

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Editorial

COVID- 19 is a well- known contagious contagious complaint caused by the new Severe Acute Respiratory Syndrome Coronavirus 2 (SARS- CoV- 2). Since its first discovery in 2019, new variants of SARS- CoV- 2 have surfaced, similar as the United Kingdom(UK) variant (B.1.1.7), the Brazilian variants, the South Africa variant (B.1.325), omicron (B.1.1.529), originally detected in Africa, ihu (B.1.640.2), detected in France, the recent mongrel variant deltacron (AY.4/ BA.1), which is a combination of the variants delta and omicron, and the newer recombination of variants BA.1 and BA.2 of the omicron variant (named XE), originally detected in the UK in April 2022. Current sanctioned data, from 2 June 2022, handed by the Center for Systems Science and Engineering(CSSE) at John Hopkins University(JHU), shows that COVID- 19 has affected further than 531 million people worldwide, killing nearly6.3 million people, including further than,800 Brazilians,,100 Canadians, and,600 Ecuadorians [1].

It's a fact that massive vaccination (reaching further than 90 in some countries) has averted or downgraded the goods of this infection, explosively dwindling the number of deaths. Still, the COVID- 19 epidemic isn't over yet, as substantiated by recent lockdowns in Shanghai and Beijing. In addition, the average worldwide vaccinated population is only 60 (some countries have vaccinated lower than 10 of their populations) and the current number of deaths is further than 3000 people diurnall [2].

Depending on the SARS- CoV- 2 variant, the symptoms of COVID- 19 can include fever or chills, cough, briefness of breath or difficulty breathing, headache, muscle or body pangs, dizziness or fatigue, sore throat, traffic or watery nose, new loss of smell or taste, nausea, puking, diarrhoea, abdominal pain or anorexia, confusion or bloodied knowledge, and rash, among others. Presently, according to the Centers for Disease Control and Prevention (CDC), persons infected with the omicron variant, which represents 99.8 of infection worldwide, can present with symptoms analogous to former variants [3].

These infected persons may be asymptomatic or characteristic, the ultimate varying among mild, severe, and critical. There are threat factors that increase the chance of developing the severe and critical interpretation of the complaint, similar as advanced age, smoking, and comorbidities (diabetes, hypertension, cardiovascular complaint, rotundity, habitual lung complaint, and order complaint). Rear- Recap Polymerase Chain response (RT- PCR) is the gold- standard to descry SARS- CoV- 2 infection; still, its high cost limits access in countries similar as Ecuador and Brazil, where this test costs between USD 45 and 65 and further than USD 100 in Canada and other countries). In addition, RT- PCR is only more dependable when the sample is attained up to three days after getting the infection, and if there's a high demand, test results can be delayed by some days.

Due to the high transmission rate of the omicron variant(much advanced than the former bones), specific measures are still demanded to reduce the spread of the epidemic, similar as indispensable individual styles for asymptomatic and characteristic individual discovery using Artificial Intelligence (AI). It's worth mentioning that about 40 to 45 of individualities with COVID- 19 are asymptomatic, which is a big concern to help the contagion's spread, as similar individualities keep transmitting the contagion without realizing that they are. Therefore, a veritably strong trouble has also been made by experimenters and diligence worldwide to develop low- cost wearable bias and stoner-friendly mobile operations to descry the symptoms of COVID- 19 using information from some biomedical signals and labels, similar as cough, heart rate variability, blood pressure, body temperature, and oxygen achromatism position [4].

Still, these biomedical data aren't decisive to confirm infection by COVID- 19, but could open avenues to be used as a webbing tool for telemedicine or remote monitoring. For case, although the sound of forced cough is suitable to give a COVID- 19 opinion, similar as claimed by another study reckoned that only 59 of people infected by COVID- 19 have a dry cough. On the other hand, the heart rate variability is another separate factor suitable to indicate possible infection by the contagion indeed in asymptomatic people. Body temperature is measured to check fever in individualities, which is another symptom that affects 99 of characteristic individualities with COVID- 19, although it doesn't do in asymptomatic bones. Another symptom of COVID- 19 is the drop in oxygen achromatism position in blood (shortened as SpO2 — supplemental capillary oxygen achromatism), and when it's below 95, this may beget serious health issues; hence, there's a need to regularly cover it. Still, other respiratory conditions similar as cold and flu also reduce the SpO2 position within the range 90- 95 without causing any major health enterprises.

The use of Artificial Intelligence (AI) grounded on biomedical data for the opinion of respiratory conditions is relatively recent. For case, presented a methodical review of workshop that address the opinion of pneumonia through several biomedical signals (including the most common bones body temperature, abnormal breathing, and cough) and using different ways of AI, similar as Logistic Retrogression (LR), Deep Learning (DL), Least Absolute loss and Selection Operation (Lariat), Random Forest, Bracket and Retrogression Trees (wain), Support Vector Machine(SVM), fuzzy sense, and k- Nearest Neighbour (K- NN), among others. The study set up that AI could help to reduce the misdiagnosis of COVID- 19, since there's significant imbrication in COVID- 19's and other respiratory conditions' symptoms. Recent exploration has been conducted using samples of sounds from individualities to infer infection by COVID- 19.in a public crowdsourced Coswara dataset, conforming of coughing, breathing, sustained vowel phonation, and one to twenty sounds recorded on a smartphone, was used for this purpose. In another study, data from the INTERSPEECH 2021 Computational Paralinguistics (ComPaRe) challenge were used to infer COVID- 19, in a double bracket, through coughing sounds and speech using two subsets from the Cambridge COVID- 19 Sound database. The first subset is the COVID- 19 Cough Sub-Challenge (CCS), which consists of cough sounds from 725 audio recordings, and the alternate subset is the COVID- 19 Speech Sub-Challenge (CSS), with only speech sounds of 893 audio recordings.

In another study, an analysis of a crowdsourced dataset of respiratory sounds was performed to rightly classify healthy and COVID- 19 sounds

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using 477 hand wrought features, similar as Mel frequence Cepstral Portions (MFCCs), zero- crossing, and spectral centroid, among others. An audio texture analysis was performed on three different signal modalities of COVID-19 sounds (cough, breath, and speech signal), using Original double Patterns (LBPs) and Haralick's system as the point birth styles. Unlike cough sounds, another study used biomedical data (body temperature, heart rate, and SpO2), collected from 1085 quarantined healthy and unhealthy individualities, through a wearable device, to infer COVID- 19 infections [5].

Conflict of Interest

None.

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