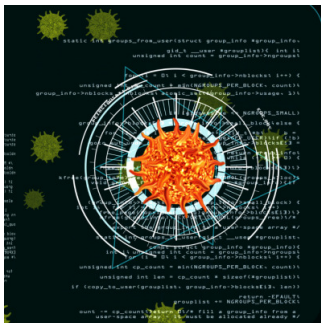


AI Predicts COVID-19 Without Testing



Using the data of about 2.5 million app users, a team of researchers have developed an artificial intelligence (AI) [model](#) that can predict whether someone might be infected with SARS-CoV-2 virus by comparing people's symptoms and the results of physical COVID-19 tests.

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The researchers at King's College London, Massachusetts General Hospital and health science company ZOE analysed the data from the COVID Symptom Study free smartphone app that was launched in the U.K. and the U.S in March 2020. It collects self-reported data from both asymptomatic and symptomatic individuals and tracks the progression in real time. The information recorded includes symptoms, hospitalisations, test outcomes, demographic data and pre-existing medical conditions.

Overall, the sample of over 2.6 million people in the UK and the U.S. was analysed. Almost 806,000 users reported symptoms associated with COVID-19. Of those 18,374 reported to have been tested for coronavirus with 7,178 confirmed cases.

The study aimed to identify the combination of symptoms most predictive of COVID-19. Although many people have presented with flu-like symptoms, the researchers found that the majority (two thirds) of those who tested positive for COVID-19 experienced anosmia (loss of taste and smell) compared with just over a fifth of the users who tested negative. Thus, anosmia could be a potential COVID-19 predictor in addition to commonly considered symptoms such as fever and persistent cough, the authors concluded.

In the UK group, all ten symptoms queried (anosmia, fever, persistent cough, fatigue, shortness of breath, diarrhoea, delirium, loss of appetite, abdominal pain, chest pain and hoarse voice) were associated with positive COVID-19 test results. In the U.S. cohort, those were anosmia, fatigue and loss of appetite.

The four key symptoms selected were anosmia, severe or persistent cough, fatigue and loss of appetite. The researchers developed a linear model to predict (with about 80% accuracy) whether an individual is likely to have COVID-19. When applied to the overall 806,000 app users who reported symptoms, the model predicted just over 140,000 (17.4%) of them were likely to have COVID-19 at that time.

While acknowledging a number of limitations to their study, such as self-report nature of data collection, insufficient data available or the influence of media coverage on symptom reporting, the researchers suggest that their model could help to identify the disease at the earliest stages and may prove to be useful in settings where access to testing is limited. They also note that anosmia should be added to the World Health Organization (WHO) symptom list and included in routine screening for the disease.

The app code is publicly available from [GitHub](#).

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