

## **Machines learn pandemic prediction**

## June 23 2021, by David Bradley



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Might machine learning and big data allow us to predict how an emerging disease might spread and so be more prepared than we were for the evolution of the COVID-19 pandemic? A new survey from India of the various techniques published in the *International Journal of Engineering Systems Modelling and Simulation* suggests so.



S. Sharma and Yogesh Kumar Gupta of Banasthali University in Jaipur, explain how they have tracked the tools and data that have been used to investigate the spread of well-known and unfortunately well-established diseases of influenza, malaria, and dengue to model the spread of a pathogen through the human population and how this spread gives rise to an epidemic. Fundamentally, they suggest, the more data that is available, the more accurate the predictions can be as long as "fake" data can be excluded. They point out that in some regions, certain diseases are always present, they are endemic, while in other regions we might observe sudden large-scale outbreaks of the same disease representing a surge in morbidity and mortality. As such, modeling could be used to make forecasts about the repeated re-emergence of certain diseases in those places.

The team's perspective on <u>machine learning</u> and <u>big data</u> points to ways in which they might be used together to provide expert decision support especially in regions of the developing world with very limited healthcare resources. Readily available information from sources such as Twitter, Google Trends, Flu Near You, Influenza Net, Wikipedia Access Logs, Health Map, Electronic Health Records, WHO, Centre for Disease Control, and Meteorological departments have all been pooled to help track the emerge of influenza and might be adapted and fed into new models for emerging pathogens as they are identified.

The team points out that different statistical tools have different pros and cons when looking at different known diseases but all can fail when there is a dearth of data. They also suggest that temperature and <u>weather</u> <u>patterns</u> can have a big influence on certain diseases and so should be taken into account when modeling emerging diseases.

**More information:** S. Sharma et al, Role of machine learning and big data in healthcare for the prediction of epidemic diseases: a survey, *International Journal of Engineering Systems Modelling and Simulation* 



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