

PRESS RELEASE

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Algorithms Aid Decision-Making During Pandemic: Public Generally Accepting of Computer Assistance

During the pandemic, many decisions with far-reaching consequences had to be made. Algorithms could have helped in making these. Researchers at the Leibniz-Institut für Wissensmedien (IWM) in Tübingen, Germany, have now discovered that citizens generally do not object to the use of algorithm-based advice by those in responsible positions as long as a human is the final decision-maker.

Who gets a potentially life-saving ventilator in overwhelmed hospitals? Until when should curfews be imposed on the population? Which businesses receive financial support after being closed for months? Questions like these had to be answered by physicians, governments or civil servants during the coronavirus pandemic. Algorithms calculate probabilities based on (big) data within seconds and therefore can be helpful in situations like the pandemic in which human deciders lack experience. Algorithmic systems for this kind of human-machine teaming have already been developed and might soon be put to use. Up to now, however, there were no findings whether the public would accept algorithmic decision-making in times of crisis.

Should decision-makers rely on algorithmic input?

The researchers from Tübingen collaborated with the German University of Freiburg to examine the role of situational and individual factors for algorithm preference. Various COVID-19-related decision scenarios were presented to the study participants. The distribution of ventilators among COVID-19 patients was considered the most morality-laden scenario whereas decisions about financial support for suffering businesses or curfew rules for members of risk groups were presumed as less severe and therefore less moral-laden. "In general, people had positive attitudes towards human-algorithm teaming – as long as a human has the final say. However, the more moral-laden the decision was, the less willing people were to allow algorithms to participate in the decision," stated Prof. Dr. Sonja Utz. The IWM researcher is heading the study as part of the Tübingen Excellence Cluster "Machine Learning: New Perspectives for the Sciences."



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Prof. Dr. Sonja Utz/©IWM Tübingen, Paavo Ruch

Algorithm acceptance varies depending on perspective

Another important insight arose from the various perspectives the study participants took. They either had to imagine themselves in the role of the decision-maker or the person affected by the decision. For the most moral-laden scenario a clear effect could be seen. "In the role of the physician, the study participants were more willing to get an initial assessment from an algorithm than when they imagined being the patient about whom the decision was being made," said Prof. Dr. Sonja Utz, who is also head of the junior research group *Social Media* at the IWM.

Besides these effects of situational factors, individual factors like conventionalism, the need for leadership as well as the attitude towards and knowledge about algorithms were also examined. The researchers were able to show that higher conventionalism was associated with a lower preference for algorithmic input, whereas a higher need for leadership in times of crisis was associated with a higher preference for algorithmic input. This was also the case for those with a positive attitude about and greater knowledge of algorithms.

In the future, the insights gained from the study accepted for publication by the Journal Human-Machine Communication could help policymakers understand under which circumstances algorithmic decision-making and different combinations of human-algorithm teaming would be accepted. In addition, the study's findings could assist in determining target groups for campaigns to increase algorithm acceptance.

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Leibniz-Institut für Wissensmedien (IWM)

The Leibniz-Institut für Wissensmedien (IWM) in Tübingen investigates how digital media influences knowledge and communication processes. Foundational and applied research focuses not only on institutional learning fields such as schools and universities, but also on informal learning on the Internet, at the workplace, or in museums. At the IWM, researchers from various disciplines work together, with many colleagues coming from the areas of psychology, communication science, neuroscience, and computer science.