Good Systems Responds to the COVID-19 Crisis
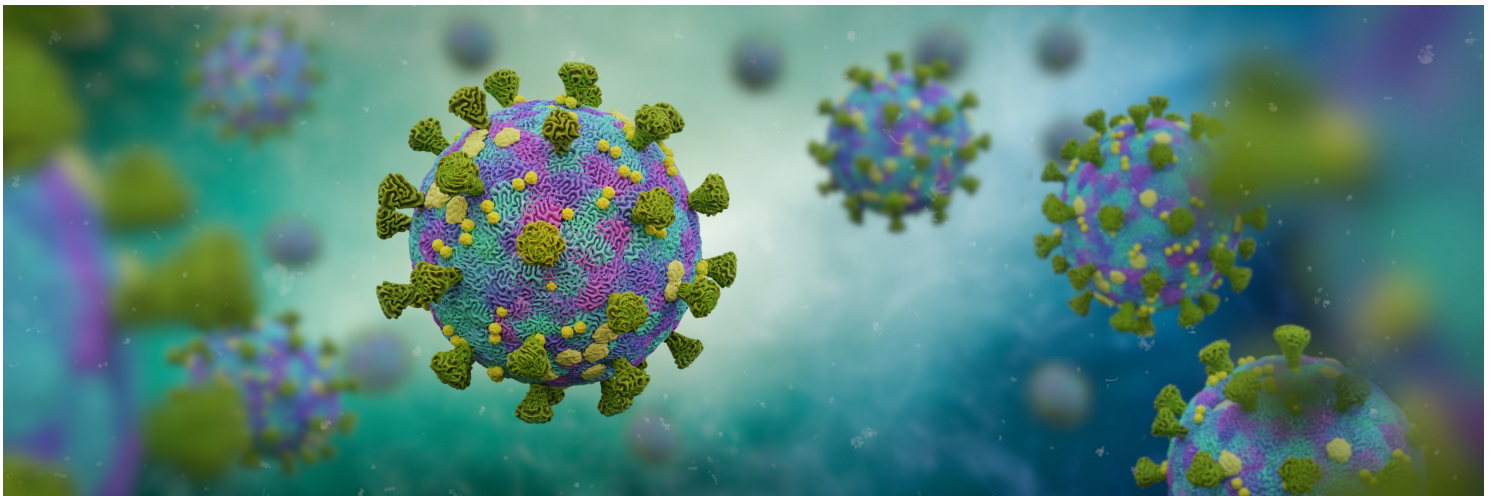
TEXAS Grand Challenges (Follow)
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By Kenneth R. Fleischmann

Close-up of the novel coronavirus.

In early February, with only 13 confirmed cases of COVID-19 in the United States, Good Systems grand challenge researchers were already anticipating the societal implications of a disease that has now come to dominate our lives.

That month, I joined a group of UT researchers from nursing, information, communication, and medicine to issue a call to action: public health crises are also information crises. Our paper was published in JASIST, a leading journal in the interdisciplinary information field, on March 13.

That was the day UT closed its campus and extended spring break before finally deciding to halt classes on campus completely for the remainder of the semester.

Research labs were abruptly shut down, staff began working remotely, and the university moved courses online.

Since that time, our diverse team of researchers from across the Forty Acres (and beyond) has continued to pivot to COVID-19 research because we understand the urgency.

Today, our teams are working on everything from mapping the spread of coronavirus through the New York transportation system to helping health care workers better understand the news. I've never been more impressed by my UT colleagues who are using AI technology to benefit society and address the crisis caused by this global pandemic.

To date, Good Systems researchers are leading at least a dozen projects related to COVID-19, just as our grand challenge moves into its second year.

- Researchers from the School of Information and the School of Nursing will collect data using Amazon's Mechanical Turk crowdsourcing platform to understand what types of health messaging are most effective, made possible by a generous NSF grant. The real-life situation we find ourselves in provides a perfect time to test how people respond to health communication online and through social media. This will help us to design better messaging to use in future emergencies.

- Researchers from the Texas Advanced Computing Center (TACC), the School of Information, and the School of Journalism have assembled 40 million tweets related to COVID-19 — one of the largest collections gathered since the pandemic began — to study how information and misinformation spread across social media, as well as how to distinguish information from misinformation. Studying tweets enables researchers to identify trends in how people perceive and respond to the pandemic.

- The Urban Information Lab in the School of Architecture is studying train and highway traffic data across New York state to detect and predict coronavirus outbreaks. They've also been modeling vehicle miles traveled at the county level nationwide during the pandemic and have found a 39% decrease in vehicle travel connected to stay-at-home orders throughout the country.

- The City of Austin is <u>partnering with researchers</u> from the School of Architecture, TACC, and UT Libraries to examine local housing, transportation, and energy consumption data to see how built environments and socioeconomic status in Austin are tied to COVID-19 cases. The goal is to help public officials identify hotspots and understand their root causes.

- Researchers in the LBJ School of Public Affairs and the School of Information will work with City of Austin Public Works and other departments <u>to help the most vulnerable among us</u> — those experiencing homelessness. The goal is to connect them with resources to cope with healthcare, housing needs, unemployment, and food insecurity, all of which are unfortunately exacerbated by the COVID-19 crisis. Public health messaging during the COVID-19 pandemic has emphasized "shelter-in-place," "stay-at-home," and "safer at home," but this messaging incorrectly assumes that everyone has a home or safe place to shelter. This research has never been more relevant.

- Researchers in the Department of Mathematics and the Department of Electrical and Computer Engineering <u>will team up with Austin-Travis County Emergency Medical Services</u> to develop new protocols for dispatchers that will reduce patients' wait times and optimize the use of hospital facilities during the pandemic. During a global health crisis, the importance of EMS response times is especially amplified.

- TACC and the School of Journalism will partner with the City of Austin to <u>examine the use of cameras</u> for traffic, security, and geolocation in places like transportation hubs, intersections, and public parks. Observing these public gathering spaces can help researchers understand and track the spread COVID-19 while also maintaining ethical standards in surveillance.

- Researchers in the Department of Psychology, Department of Computer Science, School of Journalism, and Department of Electrical and Computer Engineering will team up with Postpartum Support International to <u>develop a support bot designed for mothers</u> who are experiencing or are at risk for postpartum mood and anxiety disorders. The need for continued social distancing means that <u>caregivers of young infants are more isolated from family and friends than before</u>. Because many in-person support groups are currently cancelled, anonymous text message-based support may be even more relevant during the pandemic.

- The Institute for Media Innovation is creating a <u>digital platform</u> that enhances the ability of mental health care professionals to interact with their patients. Experts anticipate that the mental health effects of the COVID-19 pandemic will be drastic. This platform will use AI to offer multiple forms of social support by analyzing the sentiments, behaviors and interests of users.

- Researchers in the School of Journalism, Department of Information, Risk, & Operations Management, and Department of Radio-Television-Film <u>will investigate how older adults respond to disinformation and misinformation</u>. Older adults are particularly vulnerable to the coronavirus and also have poorer access to high-quality information. The group's findings could help improve this and get this vulnerable population the resources they need.

- Researchers in the School of Information are <u>exploring the usability</u> of a <u>prototype system</u> that helps people compare information from diverse sources and determine the reliability of those sources. The tool will help to counter bad information by allowing people to reliably compare and assess information and understand its source.

- Researchers from the Moody College of Communication will be overseeing a group of community emergency response volunteers in Maryland who are tracking COVID-related tweets using a machine learning computer. The volunteer group decides which tweets are relevant and which are urgent and relay that information to local emergency managers. This research will help understand the volunteers' decision-making, with the hope that it will improve coding protocols and enable computers to auto-learn these processes better.

The mission of Good Systems is to design values-based AI technologies. Despite the temporary near-closure of campus, we are not pausing our research. In fact, these new projects demonstrate that even in the midst of this pandemic, we are redoubling our efforts to leverage AI to benefit society.

Please join us on this journey.

Good Systems is a research grand challenge at The University of Texas at Austin. We're a team of information and computer scientists, robotics experts, engineers, humanists and philosophers, policy and communication scholars, architects, and designers. Our goal over the next eight years is to design AI technologies that benefit society. Follow us on Twitter, join us at our events, and come back to our blog for updates.

Kenneth R. Fleischmann, Ph.D., is a professor in UT's School of Information. His research focuses on understanding the role of human values in the design and use of information technologies and developing new technologies for ethics education.

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