High Performance Simulations to Support Real-time COVID19 Response

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ABSTRACT

The COVID-19 pandemic represents an unprecedented global crisis and serves as a reminder of the social, economic and health burden of infectious diseases. The ongoing trends towards urbanization, global travel, climate change and a generally older and immuno-compromised population continue to make epidemic planning and control challenging. Recent advances in computing, AI, and bigdata have created new opportunities for realizing the vision of real-time epidemic science.

In this talk I will describe our group's work developing scalable and pervasive computing-based concepts, theories and tools for planning, forecasting and response in the event of epidemics. I will draw on our work in supporting federal agencies as they plan and respond to the COVID-19 pandemic outbreak. I will end the talk by outlining directions for future work.

CCS Concepts/ACM Classifiers

Computing methodologies →Modeling and simulation

Author Keywords

pandemic; computational epidemiology; big data; AI; high performance computing

BIOGRAPHY

Madhav Marathe is the division director of the Network Systems Science and Advanced Computing Division at the Biocomplexity Institute and Initiative, and a Distinguished Professor at the University of Virginia. His research interests are in network science, foundations of computing, computational epidemiology, and high-performance computing. Before joining UVA, he held positions at Virginia Tech and Los Alamos National Laboratory. He is a Fellow of the IEEE, ACM, SIAM, and AAAS.

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