Introduction to this Special Issue: Modeling and Understanding the Spread of COVID-19 (Part II)

Andreas Züfle, Taylor Anderson
George Mason University
{azufle,tander6}@gmu.edu

The emergence of COVID-19 and its rapid spread across the globe has sparked research collaborations and initiatives between investigators from a vast number of disciplines including epidemiologists, social scientists, psychologists, mathematicians, geographers, data scientists, and more - all with the unified aim to better understand, predict, and mitigate the impacts of the disease. Many of these investigators make up the longstanding and interdisciplinary community that is SIGSPATIAL. Research efforts in this community offer a unique perspective for which to study the disease with a focus on the development and implementation of novel modeling, simulation, management, querying, and mining approaches that leverage the power of spatial-temporal data, much of which has increased in resolution and availability in an effort to combat COVID-19.

Part I of this Special Issue on Modeling and Understanding the Spread of COVID-19 [1] showcased current and emerging research projects related to COVID-19. It provided COVID-19 related datasets to the community [2] and presented solutions to mapping COVID-19 [3], detection of COVID-19 clusters [4], and analysis of change in human mobility due to COVID-19 [5]. Part II of this Special Issue aims to further showcase the growing number of COVID-19 related research efforts in the SIGSPATIAL community and beyond.

The goal of this newsletter special issue is to rapidly disseminate current research efforts by the SIGSPATIAL community and to facilitate discussions and collaboration

This newsletter has two sections. The first section presents three research projects and visions related to understanding and tracing the spread of COVID-19:

1. the first article by Xiong et al. describes a novel project towards real-time contact tracing of COVID-19 spread. The approach presented in this article takes special consideration on user privacy and allows users to refine the precision with which their data is collected and used,

2. the second article by Mokbel et al. discusses the limitations of (user-based) contact tracing apps and lays out the vision and guidelines of moving contact tracing from being personal responsibility to be the responsibility of facilities that users visit daily,

3. the third article by Bobashev et al. proposes the development and implementation of a novel reinforcement learning framework that combines compartmental modeling and machine learning approaches to predict the spread of COVID-19 and evaluate the risk to hospital resources,

4. the fourth article by Kim et al. presents a novel approach for combining predictions from multiple models of COVID-19 spread into a smaller set of ensemble predictions. The approach facilitates the visual analysis of the agreement between model predictions while accounting for their assumptions and uncertainty.

In the second section of this newsletter, not directly related to COVID-19, Sarwat discusses challenges and opportunities for using spatial data systems to support the Internet of Things (IoT).

All research papers across both parts of this special issue are invited to present their research at ACM SIGSPATIAL 2020 at the *1st ACM SIGSPATIAL International Workshop on Modeling and Understanding the Spread of COVID-19* to be held virtually on November 3rd, 2020. This workshop will provide a forum for our community and collaborators across domains to discuss directions, opportunities, and lessons learned to continue our fight again COVID-19 and to become more resilient to future diseases.

We hope to welcome you to the workshops and the main conference. A limited number of free conference (and workshop) registrations are available. For details see `https://sigspatial2020.sigspatial.org/registration/`. We're looking forward to seeing you virtually at the 28th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL 2020) on November 3-6, 2020!

Finally, we want to cordially thank all the authors for their excellent contributions to this issue.

References

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