

GeoSim 2018 Workshop Report

The 1st ACM SIGSPATIAL International Workshop on Geospatial Simulation

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Geospatial simulation is a powerful tool for many disciplines including urban analytics, social science and meteorology to understand, explain, and predict overly complex natural and human-made systems. For instance, hurricane simulation has been used to predict hurricane paths and to make a decisions such as evacuation plans. Traffic simulation have enabled us to forecast traffic congestion in cities around the world.

With the advances in computing and software technology, simulation is becoming a commonly accessible solution. The spatial information community has a huge potential to contribute to the geospatial simulation and *vice versa* as it provides many research avenues including creating methods for the ingestion of big spatial data, studying domain-specific problems, and using simulation-generated spatial data. In particular, synthetic data generated by plausible simulation provides many advantages over publicly available data sets that are sparse and noisy.

The 1st ACM SIGSPATIAL International Workshop on Geospatial Simulation was held in conjunction with 26th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems in Seattle, Washington, USA. It is meaningful that GeoSim 2018 takes the initiative to bring together researchers from the social sciences and engineering disciplines to disseminate their cutting-edge research in geospatial simulation and to provide a forum for cross-pollination between these communities. To maximize synergy between the SIGSPATIAL communities and simulation communities, GeoSim organizers invited experts in both the communities to the program committee for GeoSim 2018.

To draw a broad audience, the workshop focused on all aspects of simulation. Specifically as a general paradigm to model and predict spatial systems and generate spatial data. The workshop had 11 registered participants which was in the middle range of all workshops at ACM SIGSPATIAL 2018. In addition to these participants, at times the workshop had upwards of 30 participants (ranging from academia (e.g. LMU Munich, Colorado State University, Eindhoven University of Technology) to industry (e.g. Here, Apple, ESRI, Google).

This half-day workshop comprised two concise but dense sessions. The workshop featured a panel discussion regarding grand challenges in geospatial simulation and three invited talks. Dr. Joon-Seok Kim kicked off the first session with welcome and opening remarks, having brief time for participants to introduce each others. In the first session, Dr. Andrew Crooks gave a talk entitled “*Geosimulation: A Gallery of Applications*” which set the scene for the workshop. Dr. Sarah Wise from University College London presented her recent research entitled “*Using an Agent-based Model to Explore Alternative Modes of Last-Mile Parcel Delivery in Urban Contexts*” [2] which proposed a practical application in delivery industry. Taylor Anderson from Simon Fraser University presented the paper entitled “*Geographic Network Automata for Representing Complex Evolving Spatial Systems*” [1] which demonstrated how geosimulation models can be applied to real world networks.



Figure 1: Group Photo of GeoSim 2018 Attendees

In the second session, Dr. Andreas Züfle gave an invited talk entitled “*Location-Based Social Simulation: Using Agent-Based Simulation to Simulate Location and Friendship*” which outlined how the SIGSPATIAL community could leverage geosimulation models for their research. Dr. Umar Manzoor presented his work on scaling agent-based models using distributed computing under the title “*Distributed Scalable Geospatial Simulation: Challenges and Future Directions*”. All entrants including organizers actively participated in panel discussion entitled “*Challenges and opportunities for Geosimulation from Model to Data and Data to Model*.” During which participants and the panel covered a range of diverse topics from best practices for building models, validating such model to approaches to data collection and storage.

Based on the submitted papers received, the best paper award was given to Taylor Anderson and Dr. Suzana Dragicevic from Simon Fraser University with their paper entitled: “*Geographic Network Automata for Representing Complex Evolving Spatial Systems*.”

References

- [1] T. Anderson and S. Dragicevic. Geographic network automata for representing complex evolving spatial systems. In *Proceedings of the 1st ACM SIGSPATIAL International Workshop on GeoSpatial Simulation*, pages 5–8. ACM, 2018.
- [2] S. Wise, K. Cheliotis, O. Bates, A. Friday, J. Allen, F. McLeod, and T. Cherrett. Using an agent-based model to explore alternative modes of last-mile parcel delivery in urban contexts. In *Proceedings of the 1st ACM SIGSPATIAL International Workshop on GeoSpatial Simulation*, pages 1–4. ACM, 2018.