

EM-GIS2018 Workshop Report

The 4th ACM SIGSPATIAL International Workshop on Safety and Resilience

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Safety is crucial for people, and emergency management helps keep people safe. Emergency management involves four stages: Planning and Mitigation, Preparedness, Response and Recovery. Geospatial applications (including GIS) have been extensively used in each stage of emergency management. Decision-makers can utilize the geospatial information to develop planning and mitigation strategies. GIS models and simulation capabilities are used to exercise response and recovery plans during non-disaster times. They help the decision-makers understand near real-time possibilities during an event. Once disaster occurs, GIS will take effect in real time response and recovery activities

EM-GIS 2018(<https://em-gis2018.github.io/CallForPaper/index.html>) was held in conjunction with the 26th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL 2018) on November 6th, 2018 in Seattle, WA, USA. The purpose of the EM-GIS 2018 workshop is to provide a forum for researchers and practitioners to exchange ideas and progress in related areas. This workshop in the ACM SIGSPATIAL conference addresses the challenges of emergency management based on advanced GIS technologies. This workshop brought together researchers and practitioners in massive spatio-temporal data management, spatial database, spatial data analysis, spatial data visualization, data integration, model integration, cloud computing, parallel algorithms, internet of things, complex event detection, optimization theory, intelligent transportation systems and social networks to support better public policy through disaster detection, response and rescue.

EM-GIS 2018 was a one-day workshop with 17 researchers and practitioners registered. Overall, 13 research papers were presented and discussed (20 minutes for each paper). The presentations were divided into three sessions:

(1) Emergency detection and prediction. In this section, authors presented their research in evaluating signage system (*A new method of evaluating signage system using mixed reality and eye tracking*), resource security management (*Design of risk monitoring and prediction system for resource security management*), computing the landslide degree of risk (*A tool to compute the landslide degree of risk using R-Studio and R-Shiny **) and foodborn disease report and forecast system (*A VGI-based foodborn disease report and forecast system*).

(2) Transportation safety. In this section, the discussion focused on Traffic State Estimation (*Traffic state estimation with big data*), driving behaviors in disasters and risk perception (*How risk perception affect driving behaviors in disasters*), hotspots discovery (*Spatial data mining and O-D hotspots discovery in cities based on an O-D hotspots clustering model using vehicles' GPS data – a case study in the morning rush hours in Beijing, China*) and passenger flow (*Temporal-spatial Analysis & Visualization of Passenger Flow after Opening New Railway Lines in Shenzhen Metro*).

(3) Emergency evaluation. In this section, authors discussed topics on energy-optimal path planning (*Energy-Optimal Path Planning for Solar-Powered UAVs Monitoring Stationary Target*), atmospheric contaminants releases (*Playing a Chemical Cluster Environmental Protection Patrolling Game Addressing Atmospheric Contaminants Releases*), urban water distribution network pipes (*Risk evaluation of urban water distribution network pipes using neural network*) and geological disasters (*Spatial Distribution Analysis and Regional Vulnerability Assessment of Geological Disasters in China*).

The workshop had one best paper and one Best Student Paper. The best paper is *Traffic State Estimation with Big Data* authored by Han Xing, Ke Zhang, Zi Fan Yang, Jing Qian and Yi Liu. And the best student paper is *A tool to compute the landslide degree of risk using R-Studio and R-Shiny* authored by Erica Goto, Keith Clarke and Edward Keller.

We would also like to thank the authors for publishing and presenting their papers in EM-GIS 2018, and the program committee members and external reviewers for their professional evaluation and help in the paper review process. We hope that the proceedings of EM-GIS 2018 will inspire new research ideas, and that you will enjoy reading them.