Conference Report:
The 28th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL 2020)
Virtual, Online, USA
November 3—6, 2020

Chang-Tien Lu
Virginia Tech, USA
ctlu@vt.edu

Fusheng Wang
Stony Brook University, USA
fusheng.wang@stonybrook.edu

Goce Trajcevski
Iowa State University, USA
gocet25@iastate.edu

Yan Huang
North Texas University, USA
huangyan@unt.edu

Shawn Newsam
University of California, Merced, USA
snewsam@ucmerced.edu

Li Xiong
Emory University, USA
lxiong@emory.edu

1 Introduction

This report describes the development and finalization of the 28th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL 2020), held virtually online, November 3-6, 2020. The attendance for the 2020 conference was 999, the highest in the history of ACM SIGSPATIAL.

Historically, what is now the ACM SIGSPATIAL conference started as a series of workshops and symposia in 1993. Its aim was to promote the interdisciplinary discussions among researchers, developers, users, and practitioners and fostering research in all aspects of Geographic Information Systems – hence the original workshop acronym ACM GIS. The focus was on novel systems based on geospatial data and knowledge. It continued its mission of providing a forum for original research results, addressing conceptual, design, and implementation aspects of geospatial data ranging from applications, user interfaces and visualization, to data storage, query processing, indexing and data mining. The conference is now the premier annual event of the ACM Special Interest Group on Spatial Information (ACM SIGSPATIAL).

2 Program

The technical program of the conference was decided in a two-stage process:

(1) Each submitted paper was first reviewed by at least three members of a carefully chosen program committee (PC) consisting of experts in the relevant fields. Our PC had a total of 114 invited members from academia and industry, plus an additional 23 members who were designated as the Senior PC. The assignment of papers to reviewers followed a bidding stage, during which PC members were allowed to express ranked preferences regarding their willingness to review a particular submission. In addition to three reviewers from the PC, each

paper was also assigned a designated Senior PC member who studied the reviews, discussed the merits of the submission with the reviewers, wrote a metareview, and formulated an accept/reject recommendation.

(2) Similar to 2019, we implemented a rebuttal phase where the authors received preliminary versions of the reviews and were offered the opportunity to address the concerns raised therein by submitting a response. The reviews, meta-reviews, and accept/reject recommendations were then finalized, taking into account the author responses. The selection of papers to include in the conference program was ultimately made by the PC Chairs. Certain papers that were not accepted for the conference, with the permission of the authors, were forwarded to the conference's Workshop Chairs to be considered for inclusion in relevant workshops co-located with SIGSPATIAL.

The conference had a total of 198 submissions. Among these were 149 research submissions 33 of which were accepted as full 10 page papers, corresponding to an acceptance rate of 22.1%. Further, eight industrial experience and systems papers were accepted. The remaining papers in the proceedings correspond to demos and posters, which had 4 pages, and two 4 page vision papers. The latter were once again sponsored by the Computing Community Consortium (CCC) encouraging the submission of papers describing visionary ideas. Our reviewers put in a significant amount of effort in reviewing the papers and our hope is that the reviews were beneficial even to those authors whose papers were not accepted.

A paper to receive the best paper award was selected from all the accepted full papers in the research and industrial experience and systems categories. This paper was selected before the conference and the award presented at the conference. For the best paper award, the top five papers with the highest average review scores were selected as candidates. A best paper award committee consisting of six members including the three PC Co-Chairs reviewed the candidate papers and reviews and selected the best paper after discussions.

This year we held once again the SIGSPATIAL Cup programming contest, which focused on competitive spatio-temporal searching in which a managed fleet of mobile agents search for stationary resources on a road network. The competition received six submissions and the teams totaled 14 members submitting formal entries. Two entries were selected as winners, and were additionally qualified for an invited paper, an oral presentation and award prizes. Google, Maxar and Microsoft provided sponsorship for the SIGSPATIAL Cup and the awards for the winners.

The conference again held a Student Research Competition (SRC) that aimed at providing a forum for undergraduate and graduate students to share their research results and exchange ideas with other students, judges, and conference attendees. This year, four papers authored by undergraduate students and one paper authored by graduate students were selected for presentation during the conference and were further assessed for advancement to the next round of the competition, the ACM Grand Finals.

ACM SIGSPATIAL 2020 had two distinguished speakers: Ross Maciejewski (Arizona State University), who gave the first keynote presentation titled *Exploring Spatial Phenomenon with Geovisual Analytics* and Aya Soffer (IBM Research, Haifa Research Lab), who gave the second keynote presentation titled *What's next in AI - Fluid Intelligence*. In addition, this year's edition also had a tutorial entitled *A Tutorial on Learned Multidimensional Indexes* presented by Abdullah-Al-Mamun, Hao Wu and Walid G. Aref, all from Purdue University.

The conference was preceded by 10 associated workshops managed by the Workshop Co-Chairs Mohamed Sarwat (Arizona State University, USA) and Ranga Raju Vatsavai (North Carolina State University, USA), in addition to the respective individual workshop organizers.

3   COVID-induced "Journey" of SIGSPATIAL 2020

Due to the growth of the ACM SIGSPATIAL conference over the past few years, in 2019 the planning of the future conferences expanded to a period of two years in advance. Thus, the original plan set during ACM SIGSPATIAL 2019 in Chicago was to have the 2020 edition in Beijing, and 2021 in Seattle.

However, the outbreak of Covid-19 which initially had a very impact in PR China, prompted the Organizing

Committee and the Executive Committee to consider alternatives. After monitoring the development of the situation throughout February of 2020, a decision was made to "switch" the original schedule, and have ACM SIGSPATIAL 2021 in Seattle – which seemed like a sound choice at the time. The OC and the EC of our SIG kept on monitoring the situation (Covid-19 spread and its ramifications) and conferred frequently, having the best interest of the attendees in mind. In the late Spring of 2020, the developments of the pandemic in the US brought the safety of the participants, as well as the feasibility of planning trips, into a serious question.

After multiple meetings and communications, and consulting with members of our SIG outside the US, in late July 2020 a decision was brought (and shortly afterwards disseminated to the community) to hold ACM SIGSPATIAL 2020 edition virtually[1]. A task force was quickly assembled, consisting of the General Co-Chairs (Chang-Tien Lu, Goce Trajcevski, Fusheng Wang), Program Committee Co-Chairs (Yan Huang, Xiong Li, Shawn Newsam) and the Local Organizing Co-Chairs (Yaxiao (Ashley) Song and Chengyang (Charlie) Zhang). The task force had regular weekly meetings, and on multiple occasions, when needed, they were joined by other members of the Organizing Committee (Workshops; Registration; Student Competitions and GIS CUP Co-Chairs) as well as members of the Executive Committee of the SIGSPATIAL. In addition, the task force meetings were regularly attended by a group student-volunteers.

At the end, all the events of the conference and the workshops were held virtually using Zoom, where the attendees could view pre-recorded presentations and had a real-time Q&A session with the authors, coordinated by the Session Chairs and the Zoom-hosts (the student-volunteers). The participants had an opportunity to (of course, virtually) meet and chat during the breaks using Gather.town, and do the same with the representatives from our sponsors.

One of the unique aspects of SIGSPATIAL 2020 conference was that we were able to lower the registration costs and, in collaboration with ACM, even provide free Zoom licences which, as mentioned, resulted in the record number of registered participants: 999.

4 Acknowledgements and Recognitions

Recreating and organizing such a vibrant forum from year to year takes tremendous efforts and collaboration among many dedicated individuals. We are especially grateful to our PC, Senior PC and external reviewers, who generously and carefully reviewed the submissions and produced valuable feedback for both us and the authors. To produce the proceedings, we had the pleasure to work closely with two individuals who took a lot of the burden – and did a great job – Proceedings Co-Chairs Yanhua Li (Worcester Polytechnic Institute, USA) and Rose Yu (University of California San Diego, USA), who took a lot of the burden and did a great job. We thank Dejun Teng (Stony Brook University), Chrysovalantis Anastasiou (University of Southern California) and Taoran Ji (Virginia Tech) who were extremely responsive as our Webmasters.

We are also very thankful to the Publicity Co-Chairs: Xin Chen (Amazon Web Services, USA), Matthias Renz (CAU University of Kiel, Germany) and Liang Zhao (George Mason University, USA). Furthermore we thank Zhe Jiang (University of Alabama, USA) and Xun Zhou (University of Iowa, USA) who served as Poster Co-Chairs, and extend our special thanks to Arnold P. Boedihardjo (Maxar Technologies, USA), Steven Tjiang (Google, USA) and Bo Xu (HERE, USA) who organized the SIGSPATIAL Cup programming contest this year. We also thank Farnoush Banaei-Kashani (University of Colorado, Denver, USA) and Haibo Hu (Hong Kong Polytechnic University, Hong Kong, China) who served as the Tutorials Co-Chairs.

There are many other individuals who did a tremendous job for the technical organization of the event and were in charge of many related activities. We thank Jing (David) Dai (Google, USA) who served as Treasurer Chair, along with our special thanks to Theodoros Chondrogiannis (University of Konstanz, Germany), Wei-Shinn Ku (Auburn University and National Science Foundation, USA) and Michael Xia (Shenzhen University,

---

[1]A special token of gratitude for the representatives of Hyatt Regency in Seattle, the planned venue, who were understanding of our situation and agreed to void any contractual obligations.

China) who were in charge of organizing the SRC (Student Research Competition). We are indebted to Yanjie Fu (University of Central Florida, USA) and Andreas Züfle (George Mason University, USA) who served as Registration Co-Chairs. We are also indebted to Local Arrangements Co-Chairs Yaxiao (Ashley) Song (Microsoft, USA) and Chengyang Zhang (Amazon, USA) together with the student volunteers Taoran Ji (Virginia Tech), Xu Teng (Iowa State University), Dejun Teng (Stony Brook University), Fanglan Chen (Virginia Tech), Kaiqun Fu (Virginia Tech), Menghai Pan (Worcester Polytechnic Institute), Po-Han Chen (Virginia Tech), and Prabin Giri (Iowa State University) for the tremendous amount of work that they put into enabling and testing the platforms, as well as ensuring that everything in all the sessions and breaks ran smoothly throughout the conference.

We are also thankful to the outgoing ACM SIGSPATIAL Officers for their expert, sustaining guidance of the conference: Cyrus Shahabi (Chair, University of Southern California, USA), Goce Trajcevski (Vice-Chair, Iowa State University, USA), John Krumm (Treasurer, Microsoft Research, USA) and Egemen Tanin (Secretary, University of Melbourne, Australia).

A distinguished token of gratitude is due to Hanan Samet, Cyrus Shahabi and Kentaro Toyama for bringing this conference to the forefront in 2007 and starting ACM SIGSPATIAL.

We give our very special thanks to our generous corporate sponsors - Apple (Platinum Sponsor), Google, Oracle, Esri (Bronze Sponsors), Microsoft, Maxar (Other Sponsors) - many of whom have supported this conference for multiple years; and it is in order to recognize the appreciation of the work of Yao-Yi Chiang (University of Southern California, USA) and Mark McKenney (Southern Illinois University Edwardsville, USA) who were instrumental as Sponsors Co-Chairs in getting these companies to support the conference. We greatly appreciate Google, Microsoft and Maxar who provided financial sponsorship for the SIGSPATIAL Cup and the awards for the winners. Last, but not the least, the two accepted vision papers received the Blue Sky Idea award from the Computing Research Association's Computing Community Consortium (CCC).

Every year, the conference highlights the most important advances in GIS and provides a forum for lively exchange of ideas among leading researchers and practitioners in the field. In conclusion, we would like to express once again our gratitude to all the authors who submitted papers, the members of the PC and the senior PC, the conference officers, and all the other individuals who contributed their expertise and time to make the conference possible.