The SIGSPATIAL Special

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The SIGSPATIAL Special is the newsletter of the Association for Computing Machinery (ACM) Special Interest Group on Spatial Information (SIGSPATIAL).

ACM SIGSPATIAL addresses issues related to the acquisition, management, and processing of spatially-related information with a focus on algorithmic, geometric, and visual considerations. The scope includes, but is not limited to, geographic information systems.

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Editorial

Welcome to the third volume and the first issue of the SIGSPATIAL Special for 2011. This issue covers the 18th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL GIS 2010) held in San Jose, California on November 2-5, 2010. This premier event of ACM SIGSPATIAL has hosted a record number of attendees in 2010. Seven workshops have also worked under the umbrella of the conference in San Jose on November 2nd. In this issue, all of these workshops report about their activities in addition to the main report from the conference chairs.

We have also included two activity reports into this issue from the Australian and Chinese Chapters of the SIGSPATIAL. We then present the call for papers for ACM SIGSPATIAL GIS 2011 which will be held in Chicago, Illinois, from November 1st till November 4th. The issue concludes with membership information for ACM and SIGSPATIAL.

Egemen Tanin, Editor
Department of Computer Science and Software Engineering
University of Melbourne, Victoria 3010, Australia
Tel: +61 3 8344 1350
Fax: +61 3 9348 1184
Email: egemen@csse.unimelb.edu.au

Highlights from ACM SIGSPATIAL GIS 2010
The 18th ACM SIGSPATIAL International Conference on
Advances in Geographic Information Systems
(San Jose, California - November 2 – 5, 2010)

Amr El Abbadi
University of California
Santa Barbara
amr@cs.ucsb.edu

Mohamed F. Mokbel
University of Minnesota
Twin Cities
mokbel@cs.umn.edu

(PC Co-Chairs)

ACM GIS 2010 was the eighteenth event of a series of conferences, symposia, and workshops that began in 1993 with the mission of bringing together researchers, developers, users, and practitioners carrying out research and development of novel systems based on geo-spatial data and knowledge. The conference fosters interdisciplinary discussions and research in all aspects of Geographic Information Systems and Science (GIS) and provides a forum for original research contributions covering all conceptual, design, and implementation aspects of GIS ranging from applications, user interface considerations, and visualization to storage management, indexing, and algorithmic issues.

This was the third time that the conference was held under the auspices of the new ACM Special Interest Group on Spatial Information (SIGSPATIAL). The conference program attracted a record number of 250 attendees. The technical program lasted for two and half days, and based on the feedback of the participants, we can conclude that the conference was very successful in terms of new ideas presented and the level of interaction provided.

This year's program featured two outstanding keynote speakers: (1) Maneesh Agrawala, University of California at Berkeley, for a talk entitled "Designing Maps to Help People", and (2) Sebastian Thrun, Stanford University, for a talk entitled "Photographing the World Ground Up". The conference also featured seven pre-conference workshops on various related topics: (1) The Third International Workshop on Computational Transportation Science (CTS), (2) The First International Workshop on Data Mining for Geoinformatics (DMGI), (3) The First International Workshop on GeoStreaming (IWGS), (4) The First International Workshop on High Performance and Distributed Geographic Information Systems (HPDGIS), (5) The Second International Workshop on Indoor Spatial Awareness (ISA), (6) The Second International Workshop on Location-Based Social Networks (LBSN), and (7) The Third International Workshop on Security and Privacy in GIS and LBS (SPRINGL).

The call for papers led to 209 paper submissions over four tracks: research, industry, PhD showcases, and demos. The research paper track attracted 172 research paper submissions, of which 36 were accepted as full papers and another 36 were accepted as poster papers. The industry track attracted six submissions, of which four were accepted as full industrial papers. The Ph.D. Showcase track received 12 submissions, of which five were

accepted, while the demonstrations track received 19 submissions, of which 12 were accepted. The submissions were reviewed by a program committee of 120 members. Each paper was reviewed by at least three reviewers, and in most cases four. This resulted in 793 reviews over all paper tracks. These numbers indicate the continued health, interest, and growth of the research field of geographic information systems, and the need to bring its researchers, students, and industrial practitioners together.

The conference also included a business meeting for ACM SIGSPATIAL which was open to all SIGSPATIAL members as well as to all conference attendees. The meeting included a discussion of budgetary issues, plans for next year's conference, and soliciting members' feedback.

This year's conference was generously co-sponsored by NSF, ESRI, Google, and Microsoft, whose participation and generosity demonstrated what can be accomplished by a successful partnership between academia and industry. The sponsors also contributed to the conference program by participating in a very lively Sponsor Demo session preceding the conference banquet.

ACM GIS 2010 Best Papers
An ad-hoc committee for Best Paper Awards consisting of Peter Scheuermann, Agnes Voisard, Peter Widmayer, and Ouri Wolfson selected the papers for the following two awards:

Best Paper Award
- *Natural Neighbor Interpolation Based Grid DEM Construction Using a GPU*
  Alex Beutel (Duke University), Thomas Mølhave (Duke University), Pankaj K. Agarwal (Duke University)

Runner-Up for Best Paper Award
- *T-Drive: Driving Directions Based on Taxi Trajectories*
  Jing Yuan (University of Science and Technology of China), Yu Zheng (Microsoft Research Asia), Chengyang Zhang (University of North Texas), Wenlei Xie (Microsoft Research Asia), Xing Xie (Microsoft Research Asia), Guangzhong Sun (University of Science and Technology of China), Yan Huang (University of North Texas)

ACM SIGSPATIAL GIS 2010 audience during the keynote on November 4th

ACM SIGSPATIAL GIS 2010 awards ceremony during the banquet, November 4th

CTS 2010 Workshop Report
The Third International Workshop on
Computational Transportation Science
(San Jose, California - November 2, 2010)

D. Glenn Geers
NICTA
University of NSW
(General Chair)

Sabine Timpf
University of Augsburg
(PC Chair)

Steve Liang
University of Calgary
(Publicity Chair)

The 2010 ACM SIGSPATIAL GIS Conference hosted the Third International Workshop on Computational Transportation Science which was held on 2 November 2010, only seven months after a Dagstuhl Seminar (indeed it has been a busy year for the CTS Community!). CTS is an emerging discipline which aims to combine computer science and engineering with the modelling, planning, and economic aspects of transportation. It is hoped to hold a Fourth Workshop in 2011.

In the first of the two keynote talks Dr. Raja Sengupta from UC Berkeley discussed the implications of the sensor and wireless communications explosion for transport.

Dr David Skellern form NICTA followed up in the second keynote address with the way he sees research proceeding in the Smart Infrastructure and CTS areas in an Australian context.

Ten papers were submitted for presentation at the Workshop and eight were accepted. The low number of submissions can be partly explained by the late date of approval for the Workshop and the subsequent date of the Call for Papers which coincided with the European Summer vacation. All in all, the Workshop was a successful event and the papers engendered much stimulating discussion amongst the participants.

In addition to the presentations and keynotes, two break-out discussions were initiated. One session dealt with the question of whether there is a need for development platforms for Intelligent Transportation Systems and Smart Infrastructure. A discussion of necessary components for such a platform ensued. A second question discussed was how CTS might contribute to the understanding and modelling of human behaviour—this question might be turned around in asking how the modelling of human behaviour could contribute to CTS. The second session dealt with the core research agenda of CTS and how this community should proceed to engage more researchers and practitioners in these core issues.

Recommendations to 2011 ACM SIGSPATIAL GIS Organisers
1. Call for Workshop Proposals could be done ahead of the main Call for Papers in order to ameliorate the issue noted above.

2. The possibility of having pre-approved Workshops associated with ACM SIGSPATIAL GIS should be considered.

DMGI 2010 Workshop Report
The First ACM SIGSPATIAL International Workshop on
Data Mining for Geoinformatics
(San Jose, California - November 2, 2010)

Jessica Lin, Guido Cervone, Nigel Waters
George Mason University
(General Chairs)

During this one-day event, the ACM SIGSPATIAL International Workshop on Data Mining for Geoinformatics (DMGI) brought together scientists working in different fields such as geographic information science (GIS), data mining, machine learning, geoinformatics, remote sensing, and earth and atmospheric sciences, to propose new ideas, identify promising technologies, pose challenges, and inspire new research directions. It provided a forum for the exchange of ideas and the establishment of synergistic activities among researchers and practitioners from both academia and industry. The DMGI Workshop was a great success.

We received 12 submissions for the workshop. In addition to the six papers that were accepted as full papers, one paper was accepted as a student paper (equivalent to the PhD showcase that we adapted from ACM SIGSPATIAL GIS 2010). The papers cover diverse topics and applications, including:

- Polygon clustering, for analysis of ozone pollution in Texas;
- Multi-class classification, for land cover change detection;
- Framework that facilitates integration and collaboration among heterogeneous sources of spatial data on the web;
- Geospatial route extraction from texts;
- Assessment of errors in air quality models using dynamic time warping;
- View reconstruction from images, with applications in surveillance and satellite image analysis
- Land use analysis using GIS, radar, and thematic mapper in Ethiopia

The Program Committee was constituted of members from the data mining, machine learning, and geoinformatics areas. Each submitted paper was carefully reviewed by at least two reviewers.

Multiple discussion sessions were held during the workshop that gave each participant the opportunity to ask and answer questions. The discussion was not limited to the presentations, but included important topics such as the state-of-the-art and future direction for Geoinformatics and data mining. The workshop was a good opportunity to discuss the coming together of these two fast growing fields.

Suggestions for Future DMGI Events

At the end of the workshop, different opportunities for future events were discussed. Given the positive response of the participants, it was decided to continue this workshop. In the future, more emphasis will be put on topics which were not covered in the 2010 workshop such as Earth science applications, analysis of data relative to natural hazards, both atmospheric and geological, geospatial intelligence and remote sensing data analysis. More emphasis will also be put on the GIS aspect of the research, and how different existing data mining and machine learning tools can help in the analysis of data in a GIS environment.

Finally, different venues for future events were discussed, and it was decided that to offer the DMGI workshop under the auspices of the SIGSPATIAL series is commendable.

HPDGIS 2010 Workshop Report
ACM SIGSPATIAL International Workshop on
High Performance and
Distributed Geographic Information Systems
(San Jose, California - November 2, 2010)

Shaowen Wang
University of Illinois at
Urbana Champaign
(General Chair)

Nancy Wilkins-Diehr
University of California at
San Diego
(General Chair)

Anand Padmanabhan
University of Illinois at
Urbana Champaign
(Communication Chair)

Xuan Shi
Georgia Tech
(Program Chair)

Ranga Raju Vatsavai
Oak Ridge National Lab
(Program Chair)

Jianting Zhang
City College @ CUNY
(Program Chair)

The increasingly computational and data intensive nature of geospatial problem solving and the requirement to provide collaborative support across numerous fields, necessitates the use of high performance computing and distributed systems which have emerged as prominent elements in the landscape of computing and information technologies. The inaugural ACM SIGSPATIAL HPDGIS workshop was hence launched to bring together researchers and practitioners to map out the fundamental research areas centered on synergistic advances in Geographic Information Systems (GIS) and spatial analysis, high performance computing, and distributed systems

The ACM SIGSPATIAL HPDGIS 2010 workshop was a success! It was held at San Jose, California, USA on November 2, 2010 in conjunction with the 18th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems.

This year's program featured an outstanding keynote talk titled as "High Performance Computing with Spatial Datasets" by Dr. Shashi Shekhar from the University of Minnesota. The talk highlighted how high performance computing, e.g., parallelization of GIS, may meet the requirements of key geospatial applications, for example high-fidelity terrain visualization and real-time situation assessment. The talk presented two case studies 1) real-time terrain visualization in context of flight simulators, whose workload can be modeled as range queries on geospatial data-sets; and 2) parallelization of spatial data mining algorithms.

The call for papers resulted in 10 submissions, of which three of the papers were accepted as full papers, while four were accepted as short papers and over 20 attendees participated in the workshop. The workshop attracted research papers on a number of HPDGIS themes including data intensive GIS, parallel processing algorithms for GIS problems, GIS based on cloud computing, service-oriented GIS, and spatial middleware, and the program was organized into three sessions of the following themes: 1) Enabling

HPDGIS: Challenges and Advancements; 2) Data Intensive GIS; and 3) Cloud Computing Based GIS.

The "Enabling HPDGIS: Challenges and Advancements" session includes three research papers. In "Towards Personal High-Performance Geospatial Computing (HPC-G): Perspectives and a Case Study", the author advocates the use of a low cost personal HPDGIS environment developed based on Graphic Processing Unit architecture. "A Distributed Resource Broker for Spatial Middleware Using Adaptive Space-Filling Curve" presents a spatial middleware component to enable HPDGIS applications by exploiting computational capabilities of cyber-infrastructure. "High Performance Computing: Fundamental Research Challenges in Service Oriented GIS" identifies a set of fundamental research challenges for the realization of service-oriented GIS.

"Data Intensive GIS" session included papers titled "A MapReduce Approach to $Gi*(d)$ Spatial Statistic" and "Spatial Scene Similarity Assessment on Hadoop", each of which illustrates the use of the MapReduce framework to resolve two typical data-intensive problems in GIS and spatial analysis.

In the "Cloud Computing Based GIS" session, a theoretical framework for modeling the cost of a distributed service is discussed in the paper of "A Cost Model for Distributed Coverage Processing Services", while the paper titled as "Cloud Computing for Geosciences: Deployment of GEOSS Clearinghouse on Amazon's EC2" experimentally demonstrated efficient use of cloud computing for GIS and spatial analysis.

Suggestions for the 2011 ACM SIGSPATIAL HPDGIS
We would like to make the following recommendations based on HPDGIS'10 experience and feedbacks from the workshop attendees:

1. The majority of the authors and members of the PC felt that the timeline from the call for paper announcements to deadlines for paper submission, finalization of reviews and preparation for final camera ready was too constrained and a larger time window would have attracted a larger number of submissions. Hence there is a need to work closely with the parent conference to work out dates in advance and provide a longer window for paper submission.

2. Though "Demo" papers were solicited for the inaugural workshop, a demo session was not held this year mainly due to the quality of submissions received. It is felt that a demo session will be extremely valuable to the community and hence we suggest multiple invited demos (in addition to regular submission) to show HPDGIS in action.

3. Since the field of HPDGIS is quickly emerging it would be beneficial to add a panel session where community leaders are invited to lead in thought-provoking discussions, share their knowledge on the state-of-the-art, newest research and development activities, and their perspectives on future directions for research and education in HPDGIS.

ISA 2010 Workshop Report
The Other 87%: A Report on the Second International Workshop on Indoor Spatial Awareness
(San Jose, California - November 2, 2010)

Christian S. Jensen
Aarhus University
(PC Chair)

Ki-Joune Li
Pusan National University
(PC Chair)

Stephan Winter
The University of Melbourne
(General Chair)

With the increasing deployment of location-based services, geographic information systems, and ubiquitous computing, technologies and services that target indoor spaces are receiving increasing attention. This development is quite understandable because, as a paper presented at ISA 2010 points out, studies show that we lead most of our lives, 87% to be specific, in indoor settings. Those 87% are the focus of ISA 2010.

Indoor spaces differ from the traditional outdoor spaces in several respects. They exhibit a highly relevant third dimension; they may have access restrictions; they are "symbolic" in that they contain named partitions such as different types of rooms, they are relatively uniform and lack global landmarks; and they feature special indoor positioning systems. In addition, their representations are often poorly integrated with those used for outdoor spaces. New theories, data models, and systems are needed in order to provide integrated, seamless services across all spaces. For this reason, research has begun to extend the scope of location-based services and GIS to indoor spaces, with the objective of supporting indoor orientation and navigation services, emergency management, indoor space management, 3D cadastre, and beyond.

ISA 2010 was well attended and brought together a diverse and international group of researchers and practitioners from Europe, Asia, North America, and Australia covering areas such as database management, geomatics, geography, robotics, artificial intelligence, spatial cognition, and civil engineering.

The program of ISA 2010 featured a keynote talk by Ben Kuipers from the University of Michigan. Ben talked about the use of ontologies in spatial exploration and mapping. An agent learns and understands the structure of indoor space by exploration, forming a cognitive map. Ben distinguished between small-scale behavioral space, which is what the agent can directly perceive, and large-scale behavioral space, which is the space beyond the agent's horizon; and he orthogonally distinguished between two ontologies for spatial mapping: metric mapping, which uses concepts such as location, distance, direction, and pose within a single frame of reference; and topological mapping, which relates places, paths, and regions by connectivity, order, and containment. The resulting 2-by-2 matrix yields four types of representations of navigable indoor space: (i) local perceptual maps for self-motion, (ii) local decision structures, (iii) global topological maps, and (iv) global metrical maps. Ben emphasized that multiple representations are

essential, and that human knowledge and behavior provide valuable guidance in the design of autonomous mobile agents.

In addition, the program featured an invited talk by Lars Kulik from The University of Melbourne, who presented an overview of several recent research projects on localization and interaction in active indoor environments. He talked about autonomous navigation by mobile agents using RFID-enabled space partitions, object localization in active indoor environments, location sensitive "Post-It" messages, a privacy-aware active "Where Am I" system, and an active reminder system using RFID.

The peer-reviewed papers presented at ISA 2010 concerned roughly two aspects of indoor spatial awareness: (i) indoor positioning and navigation and (ii) modeling of indoor spaces. Scott Bell (University of Saskatchewan) presented challenges and experiences relating to Wi-Fi positioning, using a campus-wide Wi-Fi network as a case. Rong-xing Li (Ohio State University) presented an approach using GPS for initial, outdoor localization and using multiple sensors on an inertial measurement unit tracking a person's indoor movements. Markus Schneider (University of Florida) discussed a novel, cube-based representation for indoor space inspired by the LEGO toy bricks. Chulmin Jun (University of Seoul) presented a study of spatial partitioning for indoor environments that is based on levels of visibility. Christophe Claramunt (Naval Academy Research Institute, France) discussed an indoor representation based on three complementary layers: a (multi-granular) spatial layer, a feature layer (objects and continuous phenomena), and an action layer representing interactions between objects. Carl Schultz (University of Bremen) presented a paper on the concept of spatial access (for spatial assistance systems), based on the structural form of the environment as described by context-dependent semantics, qualitative characterizations, and object utilization and behavior. Application examples were given.

ISA 2010 ended with an outlook session during which Mike Worboys (University of Maine) outlined a research agenda for indoor spatial awareness, and specifically for the integration of indoor and outdoor spaces. Motivated by six research questions he covered important research areas: formal models of space, domain ontologies, models of indoor space, data models, and finally functional models and human performance.

The full ISA 2010 proceedings are available in ACM's Digital Library:
http://portal.acm.org/citation.cfm?id=1865885.

ISA 2011 is already in the works. Ralf-Hartmut Güting from University of Hagen and Hua Lu from Aalborg University will be PC-Chairs, and Lars Kulik from The University of Melbourne will be General Chair. Watch out for calls to contribute.

IWGS 2010 Workshop Report
The First ACM SIGSPATIAL International Workshop on GeoStreaming
(San Jose, California - November 2, 2010)

Mohamed Ali[1], Erik Hoel[2], Cyrus Shahabi[3]
[1]Microsoft, [2]ESRI, [3]University of Southern California
(General Chairs)

The ACM SIGSPATIAL International Workshop on Geostreaming (IWGS) was held for the first time in conjunction with the 18th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL GIS 2010). The workshop has been a successful event that attracted participants from both academia and industry. The workshop addressed topics that are at the intersection of data streaming and geospatial systems. The workshop fostered an environment where geospatial researchers can benefit from the advances in geosensing technologies and data streaming systems.

Workshop Description
Real-time stream data acquisition through sensors and imagery devices has been widely used in many applications. In addition to the temporal nature of stream data, various sources provide stream data that has geographical locations and/or spatial extents such as point coordinates, lines, or polygons. Thanks to advances in geosensing technologies, researchers in the geospatial community have been able to acquire huge amounts of streamed sensor data. On one hand, this amount of streamed data has been a major propeller to advance the state of the art in geographic information systems. On the other hand, the inability to process, mine, and analyze that massive amount of data in a timely manner prevented researchers from fully utilizing the incoming stream data. The geostreaming term refers to the ongoing effort in academia and industry to process, mine and analyze stream data with geographic and spatial information.

This workshop addresses the research communities in both stream processing and geographic information systems. It brings together experts in the field from academia, industry and research labs to discuss the lessons learned over the years, to demonstrate the achievements so far, and to plan for the future of geostreaming

Keynotes
The workshop featured three keynotes from three industrial companies: Microsoft, IBM and Oracle. Each industry representative showcased its interest in geostreaming and expressed how research in this area would align with today's customer needs. On one side, the keynotes provided a good opportunity for researchers to better understand the business scenarios currently targeted by these major industry leaders. On the other side, the workshop was useful for the industry representatives to learn about the ambitions and directions of researchers in order to better shape the future of geostreaming.

Research Papers
The call for paper resulted in 12 submissions of research papers. A program committee of 17 members reviewed the submissions and 9 papers have been accepted. The topics presented in the workshop include but are not limited to: traffic information systems, modeling and prediction of moving regions, airspace monitoring, identification of human activity in data streams and environmental sensing.

Suggestions for the Organizers
The following feedback has been received from the workshop participants:

1. **Industrial keynotes:** the keynotes by industry representatives received a lot of attention and got a very positive feedback from the audience and they would like to see similar industry participation in the future. A suggestion has been made to invite speakers not only from technology providers (e.g., Microsoft, IBM, Oracle) but also from industries that apply and use the geostreaming technologies within real-world applications. This mixture would provide a deeper view of use cases and practical scenarios.

2. **Panel:** A suggestion has been made to consider the format of a panel for a bigger opportunity to promote discussions among the participants.

3. **Mailing list:** A suggestion has been made to create an e-mail list so that the workshop participants remain in touch with each other, communicate major advances in the field and post announcements for future geostreaming events.

LBSN 2010 Workshop Report
The Second ACM SIGSPATIAL International Workshop on Location Based Social Networks
(San Jose, California - November 2, 2010)

Xing Xie and Wen-Chih Peng
Microsoft Research Asia
(PC Co-Chairs)

Social networking services have become very popular in recent years, especially among younger people. While many people still sit behind a desktop computer to upload photos, write blogs and communicate with friends in the virtual world, an increasing trend enabled by the development of wireless networks and location sensing technologies is to track and share personal location information on the fly with mobile devices. By adding a location dimension, social networking has now been brought from the virtual world back to real life and our real-life experiences can be shared in the virtual world in a convenient fashion. We define Location Based Social Networks (LBSN) as social networking services where people can track and share location-related information with each other, via either mobile or desktop computers. As location is one of the most important aspects in people's everyday lives, a lot of novel application scenarios can be supported by LBSN, e.g., trustworthy location recommendations can be collected and shared within LBSN and used to rank interesting locations, discover new places, people and activities.

The objective of LBSN 2010 workshop is to provide a single forum for researchers and technologists to discuss the state-of-the-art of LBSN development and applications, present their ideas and contributions, and set future directions in emerging innovative research for location based social networks.

The call for paper resulted in 15 paper submissions. Among them, 8 full papers and 2 short papers were accepted. That means the overall acceptance rate was 66.7% and for full papers, it is 53.3%.

The workshop program was organized into the following three paper sessions. Most of workshop presentations can be downloaded at:
http://carweb.cs.nctu.edu.tw/~luc/LBSN2010/
- Mining Location Based Social Networks
- Location Based Social Network Systems - 1
- Location Based Social Network Systems - 2

The following papers have been nominated as best paper candidates after paper reviewing.
- Ryong Lee and Kazutoshi Sumiya, Measuring Geographical Regularities of Crowd Behaviors for Twitter-based Geo-social Event Detection

- Josh Jia-Ching Ying, Eric Hsueh-Chan Lu, Wang-Chien Lee, Tz-Chiao Weng and Vincent S. Tseng, Mining User Similarity from Semantic Trajectories
- Chi-Yin Chow, Jie Bao and Mohamed F. Mokbel, Towards Location-based Social Networking Services

After the workshop, Lee's paper has been decided as the final best paper award winner. In the paper, they presented a geo-social event detection system based on monitoring crowd behaviors indirectly via Twitter. In particular, they attempt to find out the occurrence of local events such as local festivals; a considerable number of Twitter users probably write many posts about these events. To detect such unusual geo-social events, they depend on geographical regularities deduced from the usual behavior patterns of crowds with geo-tagged microblogs. By comparing these regularities with the estimated ones, they decide whether there are any unusual events happening in the monitored geographical area. Finally, they describe the experimental results to evaluate the proposed unusuality detection method on the basis of geographical regularities obtained from a large number of geo-tagged tweets around Japan via Twitter.

In addition, Ying's paper has been decided as the final best student paper award winner. In the paper, they propose a novel approach for recommending potential friends based on users' semantic trajectories for location-based social networks. The core of their proposal is a novel trajectory similarity measurement, namely, Maximal Semantic Trajectory Pattern Similarity (MSTP-Similarity), which measures the semantic similarity between trajectories. Accordingly, they propose a user similarity measurement based on MSTP-Similarity of user trajectories and use it as the basis for recommending potential friends to a user.

The LBSN 2010 workshop was successfully held. In total, it has attracted 33 participants, which is again the largest number among all seven parallel workshops held together with the ACM SIGSPATIAL GIS 2010 conference. 6 participants from ACM SIGSPATIAL China chapter registered this workshop.

The distribution of participants was well diversified in terms of geography. About half of the participants were from Asia-Pacific region (China, Japan, Australia, etc.). The other half comes from United States and Europe. In addition to representatives from universities, there are also industry representatives from Microsoft Research, NEC Labs, NTT, and NAVTEQ.

This is the second time for LBSN workshop to be held together with the ACM SIGSPTIAL GIS conference. Many participants actually have attended LBSN 2009 and come back again. Everyone seemed to think the workshop was great and wish to come in the future. For example, Christoph Schlieder, professor and head of the lab for semantic information processing in the University of Bamberg said, "Thank you again for this highly interesting workshop … I would very much like to read the papers that have been presented …"

LBSN 2010 workshop has attracted 33 participants from all over the world

SPRINGL 2010 Workshop Report
The Third ACM SIGSPATIAL International Workshop on Security and Privacy in GIS and LBS
(San Jose, California - November 2, 2010)

Maria Luisa Damiani (Università degli Studi di Milano, Italy)
Yucel Saygin (Sabanci University, Turkey)
(PC Co-Chairs)

Security and privacy are both critical for geospatial applications because of the dramatic increase and dissemination of geospatial data in several application contexts including homeland security, environmental crises, and natural and industrial disasters. Furthermore, geospatial infrastructures are being leveraged by companies to provide a large variety of location-based services (LBS) able to tailor services to users. However, despite the increase of publicly accessible geospatial information little attention is being paid to securing geospatial information systems (GIS) and LBS. Privacy is also of increasing concern given the sensitivity of personally-identifiable location information.

The SPRINGL workshop series provides a forum for researchers working in the area of geospatial data security and privacy. The workshop spans across security and privacy aspects, as they relate to the management of geospatial data and the development of emerging LBS, and multidisciplinary domains.

Ten papers were selected for presentation and inclusion in the workshop proceedings equally subdivided between position papers and full papers and organized into three paper sessions:
- Security
- Privacy of movement
- Applications and requirements

The Workshop program also included the invited talk by Matt Duckham from the University of Melbourne.

Invited talk. Matt opened the workshop with a talk on the foundational and driving concepts which have emerged from recent research on location privacy. In particular, Matt emphasized seven research principles. Finally, he proposed possible directions of research.

Papers. Security. *Rigel Gjomemo* presented a framework for the interoperation of access control policies across different organizations managing geospatial resources. A security policy specification language was also presented by *Patrick Capolsini* for the controlled use of visualization functionalities in map services.

<u>Privacy of movement.</u> The presentation by *Jacop Doming-Ferrer* concerned a technique for the anonymization of trajectories in data publishing. A different approach to anonymization of trajectories, emphasizing the sensitivity of places, has been illustrated by *Chiara Renso. Hyun-Jo Lee* presented an extension of cloaking algorithms for k-anonymity in LBS while *Sebastien Gambs* introduced the main features of GEPETO, a platform which supports the evaluation of various sanitization techniques and inference attacks on geolocated data.

<u>Applications and requirements</u>. Three position papers were presented in this session. *Yucel Saygin* discussed privacy requirement in Collaborative Traffic Monitoring applications. *Maria L. Damiani* introduced the problem of privacy raised by geo-enabled browsers compliant with the W3C Geolocation specification. This specification was illustrated in detail by *Nick Doty,* who also talked about the debate within the W3C community over how best to handle privacy for geolocation.

Comments and research directions. The workshop was characterized by a lively discussion on research issues and important challenges; we report some comments below:
a) Security: the interoperability of access control policies in the mobile context is an important topic that should also be explored in the context of supporting users moving across different organizations. Indeed most of the research on location-aware policies implicitly assumes that the subjects are located within a homogenous space, while in practice the movement can take place across multiple physical and organizational spaces.
b) Benchmarks: an important research issue regards the development of benchmarks for evaluating and comparing privacy-preserving techniques against selected privacy attacks.
c) Privacy semantics: another research issue concerns the semantic dimension of location privacy, i.e., the position may be sensitive depending on various factors, such as the nature of place and time. It has been emphasized that the semantics dimension is relevant not only to ensure a stronger protection of privacy in LBS but also in location data publishing. A promising research direction is towards an ontological view of privacy
d) Geolocation standards: there was agreement among the participants that the practical implications on privacy of the on-going evolution of positioning techniques beyond GPS as well as the development of geolocation standards are yet to be well understood by the research community. This evolution can raise important challenges and foster research on privacy.

Conclusion. The workshop was held in a friendly atmosphere and several participants expressed their interest to keep in touch with the SPRINGL community also beyond the workshop event. Regarding the geographical distribution of the participants, most of them were from Europe and US. The Asia-pacific region was also well represented.

All participants were very positive about the organization and very much in favour of organizing the workshop in 2011 again.

SIGSPATIAL Australia 2010 Activity Report

Rui Zhang
University of Melbourne
(Secretary and Treasurer)

Australia has witnessed a fruitful year in spatial database research. ACM SPATIAL Australia Chapter has arranged a number of activities interacting with international leading researchers in this area.

Prof. Peter Scheuermann from Northwestern University, Program Co-Chair of ACM SPATIAL GIS Conference in 2009, visited Melbourne and Brisbane, and gave public lectures in early April. This visit also led to collaborations between Prof. Scheuermann and both universities, University of Queensland and University of Melbourne. Prof. Scheuermann's visit to University of Queensland has already generated a paper published in EDBT 2011: "Probabilistic Range Queries for Uncertain Trajectories on Road Networks", K. Zheng, G. Trajcevski, X. Zhou and P. Scheuermann.

Dr. Xing Xie, Secretary of ACM SPATIAL China Chapter, a lead researcher from Microsoft Research Asia in the area of spatial data mining, location based services, and mobile and pervasive computing visited Brisbane and Melbourne and gave public lectures in late April. This visit also led to collaborations; between Dr. Xie and both universities, University of Queensland and University of Melbourne. Dr. Xie's visit to University of Queensland has generated a paper: "Searching Trajectories by Locations - An Efficiency Study", Z. Chen, H. T. Shen, X. Zhou, Y. Zheng, X. Xie, published in SIGMOD 2010.

Prof. Xiaofang Zhou has also attended the ACM SIGSPATIAL China Chapter's annual meeting in December 2010 in Beijing to further bilateral collaborations between the two chapters.

We are now planning the following new activities for 2011: (i) We plan to have a workshop on spatial databases later this year, (ii) Yu Zheng of Microsoft Research Asia and Prof. Xiaofang Zhou are collaborating on editing a book on trajectory computing, (iii) Dr. Rui Zhang from University of Melbourne, Secretary of ACM SIGSPATIAL Australia Chapter, will visit Microsoft Research Asia in the second half of 2011.

The workshop on spatial databases that is planned for this year will also be the first official meeting of the chapter and we hope to further promote the chapter with this gathering.

SIGSPATIAL China 2010 Activity Report

Xing Xie
Microsoft Research Asia
(Secretary)

In order to promote ACM SIGSPATIAL and corresponding research area in China, and encourage collaboration between SIGSPATIAL researchers in China and researchers worldwide, in October 2009, we have established ACM SIGSPATIAL China chapter, with the strong support of SIGSPATIAL executive committee.

The current chapter officers are:
- Chair: Prof. Qingquan Li, Wuhan University
- Vice chair: Prof. Xiaofeng Meng, Renmin University
- Secretary: Dr. Xing Xie, Microsoft Research Asia
- Treasurer: Prof. Yang Yue, Wuhan University

After one year, now we have 29 professional members in SIGSPATIAL China. They come from Chinese universities/research institutes such as Wuhan University, Renmin University, University of Science and Technology of China, Chinese Academy of Sciences, and industry labs such as Microsoft Research Asia and Nokia Research China. More information about the chapter can be found at www.sigspatial.org.cn. A mailing list (BEIJING-SIGSPATIAL-MEMBERS@LISTSERV.ACM.ORG) has been created for member communication.

In the last week of April 2010, Prof. Xiaofang Zhou, Chair of SIGSPATIAL Australia invited Dr. Xing Xie, Secretary of SIGSPATIAL China to visit University of Queensland and University of Melbourne. In Australia, Dr. Xie has met Xiaofang Zhou, Egemen Tanin and Rui Zhang and discussed the collaboration opportunities between two chapters.

In June 2010, we edited a special issue on location based services in Communications of CCF (China Computer Federation), which is a highly influential magazine in the computer science community in China. The special issue was edited by Xing Xie and Xiaofeng Meng, including five research articles written by SIGSPATIAL China members. We mentioned ACM SIGSPATIAL information in the forewords of this special issue.

We have held the second SIGSPATIAL China business meeting in Renmin University on December 19, 2010. Fifteen SIGSPATIAL China members attended the meeting. Xiaofang Zhang, Chair of SIGSPATIAL Australia and Pusheng Zhang, General Chair of ACM SIGSPATIAL GIS 2010 Conference also participated in this meeting.

During the meeting, participants first got familiar with each other and then discussed the progress and next steps for this chapter. Qingquan Li introduced related research projects in Wuhan University and activities in the GIS community. Xiaofeng Meng presented activities in China Computer Federation and Renmin University. He proposed to organize

a SIGSPATIAL Asia workshop series, to further strengthen the collaboration among Asian researchers. Pusheng Zhang gave a brief introduction to ACM SIGSPATIAL GIS 2010 Conference and discussed the possibility of holding this conference in China in the future. Xiaofang Zhou described the current status of SIGSPATIAL Australia and suggested that we should work together to improve the ranking of SIGSPATIAL Conference. That will eventually benefit all researchers in this field.

After these short presentations, we hold a free discussion session among all participants. Topics discussed in this session include research data sharing, SIGSPATIAL Asia workshop, mutual visits and joint research projects. Everyone agreed that SIGSPATIAL will become a great platform for researchers to build connections and generate impact.

Second SIGSPATIAL China business meeting participants (First row: Guangzhong Sun, Yu Zheng, Pusheng Zhang, Feng Lu, Qingquan Li, Xiaofeng Meng, Xing Xie, Zhiming Ding, Yang Yue; Second row: Yingqing Xu, Yiqiang Chen, Xiaofang Zhou, Jinyun Fang, Peiqun Jin, Wen Wang, Guohui Li, Junfa Liu, Guoqiong Liao)

For future activities, we plan to hold annual workshops organized by both GIS and CS communities. We will organize a chapter workshop together with ACM UbiComp 2011 in Beijing. In addition, China GIS Professional Association is going to invite ACM SIGSPATIAL China members to attend the 2011 annual meeting, and will discuss the collaboration between two communities.

19th ACM SIGSPATIAL International Conference on
Advances in Geographic Information Systems (ACM SIGSPATIAL GIS 2011)
November 1-4, 2011, Chicago, IL, USA
http://acmgis2011.cs.umn.edu/

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The *ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems* 2011 (*ACM SIGSPATIAL GIS 2011*) is the nineteenth event in a series of symposia and workshops that began in 1993 with the aim of bringing together researchers, developers, users, and practitioners in relation to novel systems based on geo-spatial data and knowledge, and fostering interdisciplinary discussions and research in all aspects of geographic information systems. The conference provides a forum for original research contributions covering all conceptual, design, and implementation aspects of GIS ranging from applications, user interfaces, and visualization to data storage and query processing and indexing. The conference is the premier annual event of the ACM Special Interest Group on Spatial Information (ACM SIGSPATIAL). Researchers, students, and practitioners are invited to submit their contributions to ACM SIGSPATIAL GIS 2011.

Suggested topics include but are not limited to:

- Cartography and Geodesy
- Computational Geometry
- Computer Graphics Applications in GIS
- Computer Vision Applications in GIS
- Distributed and Parallel algorithms for GIS
- Earth Observation
- Geographic Information Retrieval
- GPU and Novel Hardware Solutions for GIS
- Human Computer Interaction and Visualization
- Image and Video Understanding
- Location-based Services
- Location Privacy, Data Sharing and Security
- GIS Performance Evaluation
- Photogrammetry
- Similarity Searching
- Spatial Analysis and Integration
- Spatial and Spatio-Temporal Data Acquisition
- Spatio-Temporal Data Analysis
- Spatial Data Mining and Knowledge Discovery
- Spatial Data Quality and Uncertainty
- Spatial Data Structures and Algorithms
- Spatial Data Warehousing, OLAP, and Decision Support
- Spatial Information and Society
- Spatial Modeling and Reasoning
- Spatial Query Processing and Optimization
- Spatio-Temporal Data Management
- Spatio-Temporal Sensor Networks
- Spatio-Temporal Stream Processing
- Spatio-Textual Searching
- Standardization and Interoperability for GIS
- Storage and Indexing
- GIS Architectures and Middleware
- Traffic Telematics
- Transportation
- Urban and Environmental Planning
- Visual Languages and Querying
- Web and Real-Time Applications

Important Dates (All Submissions)

Abstract Submission:	June 17, 2011
Full Submission:	June 24, 2011
Notification:	September 2, 2011

Paper Format: Authors are invited to submit full, original, unpublished research papers that are not being considered for publication in any other forum. Manuscripts should be submitted in PDF format and formatted using the ACM camera-ready templates available at http://www.acm.org/sigs/pubs/proceed/template.html. Submissions are limited to 10 pages. In addition to the regular full-length papers, the Program Committee may accept some as poster or demo papers which will be requested to be shortened. All submissions will be refereed for quality, originality, and relevance by the Program Committee. Accepted papers will be considered for "Best Paper Award."

Ph.D. Dissertation Showcase Papers: Ph.D. students are encouraged to submit their Ph.D. research contributions and work-in-progress. Submissions are limited to 6 pages -- append "(Ph.D. Showcase)" to the title. Student authors of accepted papers will be given an opportunity to present a summary of their research at the conference. Successful Ph.D. showcase papers will appear in the ACM SIGSPATIAL Newsletter.

Industrial Papers: Industrial and experience papers are invited that describe original industrial experiences, challenges, and applications to be presented during the conference. Industrial paper submissions are limited to 10 pages -- append "(Industrial Paper)" to the title. Accepted industrial experience papers will appear in the conference proceedings.

Demonstration Papers: Authors are invited to submit demo papers describing original demonstrations to be presented at the conference. Submissions are limited to 2 pages -- append "(Demo Paper)" to the title. Accepted demo papers will appear in the conference proceedings.

Submission: Submissions should be uploaded through the submission site at:**https://cmt.research.microsoft.com/SIGSPATIAL2011**. One author per accepted paper, poster, Ph.D. Dissertation showcase, industrial paper, or demo is required to register and attend the conference and to present the accepted submission. Otherwise, the accepted submission will not appear in the published conference proceedings or in the ACM Digital Library version of the conference proceedings. All questions should be addressed to the PC Chairs.

Workshop Proposals: One-day workshops will be held on November 1, 2011. Workshop proposals are to be submitted in PDF format to the Workshop Chair. The proceedings of the workshops will appear in the ACM Digital Library. All proposers and organizers of accepted workshops must register for the workshop or the workshop will be canceled. For details on how to prepare a workshop proposal and what workshops entail, see http://acmgis2011.cs.umn.edu/workshops/.

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SIGSPATIAL & ACM

The **ACM Special Interest Group on Spatial Information** (SIGSPATIAL) addresses issues related to the acquisition, management, and processing of spatially-related information with a focus on algorithmic, geometric, and visual considerations. The scope includes, but is not limited to, geographic information systems (GIS).

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