

2014 IEEE 15th International Conference on Mobile Data Management

(MDM 2014)

**Brisbane, Australia
14-18 July 2014**

**Volume 1
Pages 1-373**



**IEEE Catalog Number: CFP14299-POD
ISBN: 978-1-4799-5706-4**

2014 IEEE 15th International Conference on Mobile Data Management

MDM 2014

Table of Contents Volume - 1

Message from General Co-chairs.....	.xi
Message from Program Co-chairs.....	.xiii
Message from Industrial Track Co-chairs.....	.xiv
Message from Demonstration Track Co-chairs.....	.xv
Conference Officers.....	.xvi
Program Committee.....	.xviii
External Reviewers.....	.xxi
Sponsors.....	.xxii
Keynotes.....	.xxiii

MDM 2014 Proceedings - Volume One

Panel Abstracts

Mobile Big Data Analytics: Research, Practice, and Opportunities	1
<i>Demetrios Zeinalipour-Yazti and Shonali Krishnaswamy</i>	

Session 1: Query Processing

Supporting Location-Based Services in a Main-Memory Database	3
<i>Suprio Ray, Rolando Blanco, and Anil K. Goel</i>	
Cost-Efficient Spatial Network Partitioning for Distance-Based Query Processing	13
<i>Jiping Wang, Kai Zheng, Hoyoung Jeung, Haozhou Wang, Bolong Zheng, and Xiaofang Zhou</i>	

A*-based Solutions for KNN Queries with Operating Time Constraints in Time-Dependent Road Networks	23
<i>Camila F. Costa, Mario A. Nascimento, José Antônio Fernandes De Macêdo, and Javam Machado</i>	

Session 2: Recommendation

Trip Recommendation with Multiple User Constraints by Integrating Point-of-Interests and Travel Packages	33
<i>Shih-Hsin Fang, Eric Hsueh-Chan Lu, and Vincent S. Tseng</i>	
Estimating Common Pedestrian Routes through Indoor Path Networks Using Position Traces	43
<i>Thor S. Prentow, Henrik Blunck, Kaj Grønbaek, and Mikkel B. Kjærgaard</i>	
WhereToGo: Personalized Travel Recommendation for Individuals and Groups	49
<i>Long Guo, Jie Shao, Kian-Lee Tan, and Yang Yang</i>	

Session 3: Privacy and Authentication

Differentially Private Location Recommendations in Geosocial Networks	59
<i>Jia-Dong Zhang, Gabriel Ghinita, and Chi-Yin Chow</i>	
Design and Implementation of the Privacy Management Platform	69
<i>Christoph Stach and Bernhard Mitschang</i>	
Spatial Task Assignment for Crowd Sensing with Cloaked Locations	73
<i>Layla Pournajaf, Li Xiong, Vaidy Sunderam, and Slawomir Goryczka</i>	
A Location-Based Authentication System Leveraging Smartphones	83
<i>Yusuf Albayram, Mohammad Maifi Hasan Khan, Athanasios Bamis, Sotirios Kentros, Nhan Nguyen, and Ruhua Jiang</i>	

Session 4: Smart Cities and Sensor Clouds

NITOS BikesNet: Enabling Mobile Sensing Experiments through the OMF Framework in a City-Wide Environment	89
<i>Giannis Kazdaridis, Donatos Stavropoulos, Vasilis Maglogiannis, Thanasis Korakis, Spyros Lalis, and Leandros Tassiulas</i>	
E-VeT: Economic Reward/Penalty-Based System for Vehicular Traffic Management	99
<i>Nilesh Padhariya, Ouri Wolfson, Anirban Mondal, Varun Gandhi, and Sanjay Kumar Madria</i>	
Efficient and Secure Code Dissemination in Sensor Clouds	103
<i>Vimal Kumar and Sanjay Madria</i>	

9 Million Bicycles? Extending Induction Loops with Bluetooth Sensing	113
<i>Stephan Jansen, Dennis Höting, Jens Runge, Thomas Brinkhoff, Daniela Nicklas, and Jürgen Sauer</i>	

Session 5: RFID and Quality

Handling False Negatives in Indoor RFID Data	117
<i>Asif Iqbal Baba, Hua Lu, Torben Bach Pedersen, and Xike Xie</i>	
Pattern-Wise Trust Assessment of Sensor Data	127
<i>Robert Gwadera, Mehdi Riahi, and Karl Aberer</i>	
Trajectory Event Cleaning for Mobile RFID Objects	137
<i>Guoqiong Liao, Philip S. Yu, Qianhui Zhong, Sihong Xie, Zhen Shen, Changxuan Wan, and Dexi Liu</i>	

Session 6: Middleware and Context-Awareness

Effective Mobile Context Pattern Discovery via Adapted Hierarchical Dirichlet Processes	146
<i>Jiangchuan Zheng, Siyuan Liu, and Lionel M. Ni</i>	
ConCon: Context-Aware Middleware for Content Sharing in Dynamic Participating Environments	156
<i>Michael Madhukalya and Mohan Kumar</i>	
Using Location-Based Social Networks for Time-Constrained Information Dissemination	162
<i>Iouliana Litou, Ioannis Boutsis, and Vana Kalogeraki</i>	
MadApp: A Middleware for Opportunistic Data in Mobile Web Applications	172
<i>Venkat Srinivasan and Christine Julien</i>	

Session 7: Mobile Analytics

A Clustering Approach to the Discovery of Points of Interest from Geo-Tagged Microblog Posts	178
<i>Anders Skovsgaard, Darius Šidlauskas, and Christian S. Jensen</i>	
Finding Dense Locations in Indoor Tracking Data	189
<i>Tanvir Ahmed, Torben Bach Pedersen, and Hua Lu</i>	
Mining Mobility Evolution from Check-In Datasets	195
<i>Meng-Fen Chiang, Chien-Cheng Chen, Wen-Chih Peng, and Philip S. Yu</i>	
A Smartphone User Activity Prediction Framework Utilizing Partial Repetitive and Landmark Behaviors	205
<i>Peng Dai and Shen-Shyang Ho</i>	

Session 8: Sensing and Recognizing

Distinguishing Electric Vehicles from Fossil-Fueled Vehicles with Mobile Sensing	211
<i>Markus Wüstenberg, Henrik Blunck, Kaj Grønbaek, and Mikkel Baun Kjærgaard</i>	
Cloud-Based Query Evaluation for Energy-Efficient Mobile Sensing	221
<i>Tianli Mo, Sougata Sen, Lipyeow Lim, Archan Misra, Rajesh Krishna Balan, and Youngki Lee</i>	
Overhearing-Based Efficient Boundary Detection in Dense Mobile Wireless Sensor Networks	225
<i>Kazuya Matsuo, Keisuke Goto, Akimitsu Kanzaki, Takahiro Hara, and Shojiro Nishio</i>	

Session 9: Search and Indexing

Social-Aware Top-k Spatial Keyword Search	235
<i>Dingming Wu, Yafei Li, Byron Choi, and Jianliang Xu</i>	
Keyword Based Semantic Search for Mobile Data	245
<i>Jihoon Ko, Sangjin Shin, Sungkwang Eom, Minjae Song, Jooik Jung, Dong-Hoon Shin, Kyong-Ho Lee, and Yongil Jang</i>	
ToSS-it: A Cloud-Based Throwing Spatial Index Structure for Dynamic Location Data	249
<i>Afsin Akdogan, Cyrus Shahabi, and Ugur Demiryurek</i>	

Session 10: Top-K

Efficient Retrieval of Top-K Most Similar Users from Travel Smart Card Data	259
<i>Bolong Zheng, Kai Zheng, Mohamed A. Sharaf, Xiaofang Zhou, and Shazia Sadiq</i>	
Efficient Top-k Spatial Locality Search for Co-located Spatial Web Objects	269
<i>Qiang Qu, Siyuan Liu, Bin Yang, and Christian S. Jensen</i>	
Top-k Query Processing and Malicious Node Identification against Data Replacement Attack in MANETs	279
<i>Takuji Tsuda, Yuka Komai, Yuya Sasaki, Takahiro Hara, and Shojiro Nishio</i>	

Industrial Papers

Session 1: Applications of MDM

CityZen: A Cost-Effective City Management System with Incentive-Driven Resident Engagement	289
<i>Tridib Mukherjee, Deepthi Chander, Anirban Mondal, Koustuv Dasgupta, Amit Kumar, and Ashwin Venkat</i>	
RoadEye: A System for Personalized Retrieval of Dynamic Road Conditions	297
<i>Anirban Mondal, Avinash Sharma, Kuldeep Yadav, Abhishek Tripathi, Atul Singh, and Nischal Piratla</i>	
ScoDA: Cooperative Content Adaptation Framework for Mobile Browsing	305
<i>Ayush Dubey, Pradipta De, Kuntal Dey, Sumit Mittal, Vikas Agarwal, Malolan Cheltur, and Sougata Mukherjea</i>	
eHealth TABLET: A Developing Country Perspective in Managing the Development and Deployment of a Mobile - Cloud Electronic Medical Record for Local Government Units	313
<i>Ma. Regina Estuar, Dennis Batangan, Andrei Coronel, Francisco Enrique Vicente Castro, Anna Christine Amarra, Rose Ann Camille Caliso, and John Paul Vergara</i>	

Session 2: Location, Location, Location

Enabling Location-Based Services 2.0: Challenges and Opportunities	317
<i>Saket Sathe, Roie Melamed, Peter Bak, and Shivkumar Kalyanaraman</i>	
Oscillation Resolution for Mobile Phone Cellular Tower Data to Enable Mobility Modelling	321
<i>Wei Wu, Yue Wang, Joao Bartolo Gomes, Dang The Anh, Spiros Antonatos, Mingqiang Xue, Peng Yang, Ghim Eng Yap, Xiaoli Li, Shonali Krishnaswamy, James Decraene, and Amy Shi-Nash</i>	
EnviS Tag, Scan, View: A Location-Based App for Visualizing Spatio-temporal Data from Sensor Cloud	329
<i>Flora Salim, Mars Dela Pena, Yury Petrov, Nishant Sony, Bo Wu, and Abdelsalam Ahmed Saad</i>	

Demo Papers

ORange: Objective-Aware Range Query Refinement	333
<i>Abdullah Albarrak, Tatiana Noboa, Hina A. Khan, Mohamed A. Sharaf, Xiaofang Zhou, and Shazia Sadiq</i>	
Real-Time QoS Monitoring for Cloud-Based Big Data Analytics Applications in Mobile Environments	337
<i>Khalid Alhamazani, Rajiv Ranjan, Prem Prakash Jayaraman, Karan Mitra, Meisong Wang, Zhiqiang George Huang, Lizhe Wang, and Fethi Rabhi</i>	

Hybrid Queries over Symbolic and Spatial Trajectories: A Usage Scenario	341
<i>Maria Luisa Damiani, Hamza Issa, Ralf Hartmut Güting, and Fabio Valdes</i>	
An Interactive Analytics Tool for Understanding Location Semantics and Mobility of Users Using Mobile Network Data	345
<i>Manoranjan Dash, Gim Guan Chua, Hai-Long Nguyen, Ghim-Eng Yap, Cao Hong, Xiaoli Li, Shonali Priyadarsini Krishnaswamy, James Decraene, and Amy Shi-Nash</i>	
A Cross-Media Music Retrieval System by Converting Color Changes into Tonal Changes	349
<i>Yoshiyuki Kato and Shuichi Kurabayashi</i>	
RouteMiner: Mining Ship Routes from a Massive Maritime Trajectories	353
<i>Yu-Ting Wen, Chien-Hsiang Lai, Po-Ruey Lei, and Wen-Chih Peng</i>	
SimMiner: A Tool for Discovering User Similarity by Mining Geospatial Trajectories	357
<i>Naveen Nandan and David Sinjaya</i>	
HipStream: A Privacy-Preserving System for Managing Mobility Data Streams	360
<i>Huayu Wu, Shili Xiang, Wee Siong Ng, Wei Wu, and Mingqiang Xue</i>	
A Demonstration of the NITOS BikesNet Framework	364
<i>Giannis Kazdaridis, Donatos Stavropoulos, Stavros Ioannidis, Thanasis Korakis, Spyros Lalis, and Leandros Tassioulas</i>	
PopTour: Discovering Journey Group T-Patterns from Instagram Trajectories to Recommend Hot Travel Routes	368
<i>Shuangyu Yu, Yaxin Yu, Yulong Li, and Xin Liu</i>	
Author Index	371

2014 IEEE 15th International Conference on Mobile Data Management

(MDM 2014)

**Brisbane, Australia
14-18 July 2014**

**Volume 2
Pages 1-85**



**IEEE Catalog Number: CFP14299-POD
ISBN: 978-1-4799-5706-4**

2014 IEEE 15th International Conference on Mobile Data Management

MDM 2014

Table of Contents Volume - 2

Message from Advanced Seminar Co-chairs	viii
Message from PhD Colloquium Co-chairs	ix
Message from Workshop Co-chairs	x
Message from HuMoComp Workshop Co-chairs	xi
Message from M-CROS Workshop Co-chairs	xii
Workshops Organization	xiii

MDM 2014 Proceedings - Volume Two

Advanced Seminar Abstracts

Semantic Trajectories and Beyond	1
<i>Maria Luisa Damiani and Ralf Hartmut Güting</i>	
Fusing Information, Crowdsourcing and Mobility	4
<i>Vladimir Zadorozhny and Michael Lewis</i>	
Dynamic Content and Route Management in Wireless Networks	7
<i>Sanjay Kumar Madria, Anirban Mondal, and Tridib Mukherjee</i>	

Ph.D. Colloquium Papers

Information Enrichment for Tourist Spot Recommender System Using Location Aware Crowdsourcing	11
<i>Sunita Tiwari and Saroj Kaushik</i>	
K Anonymity Based on Fuzzy Spatio-temporal Context	15
<i>Priti Jagwani and Saroj Kaushik</i>	

Towards High Performance Spatio-temporal Data Management Systems	19
<i>Suprio Ray</i>	

A Framework for Continuous Group Activity Recognition Using Mobile Devices: Concept and Experimentation	23
<i>Amin Bakhshandehabkenar, Seng W. Loke, and Wenny Rahayu</i>	

HuMoComp Workshop Papers

Understanding Sustainable Mobility: The Potential of Electric Vehicles	27
<i>Michelle Scott, Debbie Hopkins, and Janet Stephenson</i>	

Skyline Travel Routes: Exploring Skyline for Trip Planning	31
<i>Wan-Ting Hsu, Yu-Ting Wen, Ling-Yin Wei, and Wen-Chih Peng</i>	

Home and Work Place Prediction for Urban Planning Using Mobile Network Data	37
<i>Manoranjan Dash, Hai Long Nguyen, Cao Hong, Ghim Eng Yap, Minh Nhut Nguyen, Xiaoli Li, Shonali Priyadarsini Krishnaswamy, James Decraene, Spiros Antonatos, Yue Wang, Dang The Anh, and Amy Shi-Nash</i>	

Human Mobility Prediction and Unobstructed Route Planning in Public Transport Networks	43
<i>Shuo Shang, Danhuai Guo, Jiajun Liu, and Kuien Liu</i>	

M-CROS Workshop Papers

Session 1: Crowdsourcing/Sensing in Mobile and Wireless Sensor Networks

Energy Efficient Resource Distribution for Mobile Wireless Sensor Networks	49
<i>Mohamed M. Ali Mohamed, Ashfaq Khokhar, and Goce Trajcevski</i>	

A Negative Location-Based Information Dissemination Method in Mobile Ad Hoc Networks	55
<i>Yuya Sasaki, Toshimitsu Fujii, Mitsuru Kaji, Takahiro Hara, and Shojiro Nishio</i>	

Towards Declarative Programming for Mobile Crowdsourcing: P2P Aspects	61
<i>Jurairat Phuttharak and Seng W. Loke</i>	

Session 2: Crowdsensing for Transportation and Smarter Cities Initiatives

Challenges in Crowdsourcing Real-Time Information for Public Transportation	67
<i>Naveen Nandan, Andreas Pursche, and Xing Zhe</i>	
Exploring Location-Related Data on Smart Phones for Activity Inference	73
<i>Xiao-Wen Ruan, Shou-Chung Lee, and Wen-Chih Peng</i>	
edPAS: Event-Based Dynamic Parking Allocation System in Vehicular Networks	79
<i>Kshama Raichura and Nilesh Padhariya</i>	
Author Index	85