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### UrbanMM'21

*1st International Workshop on Multimedia Computing for Urban Data*

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# UrbanMM'21: 1st International Workshop on Multimedia Computing for Urban Data

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## ABSTRACT

Understanding complex processes that give cities their form traditionally relied primarily on the analysis of various open data statistics in relation to e.g. neighbourhood demographics, economy and mobility. However, recent years have seen an unprecedented increase in the availability and use of city-related sensors, participatory data and social multimedia. As the valuable information about urban challenges is usually encoded across multiple modalities, such as visual (e.g. panoramic, satellite and user-contributed images), text (e.g. social media and participatory data) and open data statistics, extracting this information requires effective multimedia analysis tools. This Workshop will showcase the power of multimedia computing in addressing various urban challenges, ranging from event detection and analysis, location recommendation and crowdedness estimation to more efficient handling of citizen reports and modelling and improving city liveability. In addition, it will serve as an impulse for the multimedia community to intensify research on these interesting, challenging and truly multimodal problems.

## CCS CONCEPTS

• **Information systems** → **Multimedia and multimodal retrieval**; • **Applied computing**;

## KEYWORDS

multimedia computing, urban multimedia data, city liveability

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## 1 SCOPE AND TOPICS OF THE WORKSHOP

The workshop welcomes a wide range of multimedia computing topics including, but not limited to:

- Urban event detection and analysis
- Crowdedness estimation
- Real-time asset monitoring
- Efficient handling of citizen reports
- Modelling and improving city liveability
- Urban object detection
- Crowd-mapping
- Developing advanced, highly accurate and safe high definition maps for self-driving vehicles
- Location recommendation and virtual city exploration
- Making sense of weak signals for emerging event detection and planning (related to e.g. food security, health epidemic and financial crisis)
- Using urban data in planning for future smart and green cities
- Mobile crowdsourcing, urban awareness, and collective action
- Automatic mapping of footpath accessibility
- Urban data analytics for sustainability assessment

The workshop will showcase enormous richness of urban multimedia data, including structured, heterogeneous and time series data, city's basic demographic and infrastructure data, supply chain data, open data (covering e.g. economic, health and crime statistics), participatory data and social multimedia signals.

## 2 WORKSHOP FORMAT

The workshop will feature regular research papers, technical demos and invited talks followed by panel discussions involving the authors, workshop organizers and the audience. The workshop proceedings can be accessed through a designated ACM DL page<sup>1</sup>.

## 3 ORGANISERS

**Stevan Rudinac** is an Associate Professor of Artificial Intelligence for Business at the University of Amsterdam Business School. He holds a PhD degree in computer science from Delft University of Technology. He has worked as a researcher at the University of Belgrade, Eindhoven University of Technology, and the Netherlands

<sup>1</sup><http://dl.acm.org/citation.cfm?id=3475721>

Forensic Institute. He conducts research on multimedia analytics, i.e. facilitating access to large multimedia collections and gaining insight from them, by jointly analyzing visual content and the heterogeneous information associated with it, ranging from text and automatically generated metadata to information about users and their social network. His research focuses on urban computing and business applications.

**Alessandro Bozzon** is a Professor of Human-Centered Artificial Intelligence with the Department of Sustainable Design Engineering of the Faculty of Industrial Design Engineering (IDE); and part-time professor with the Department of Software Technology of the Faculty of Electrical Engineering, Mathematics, and Computer Science (EEMCS) of Delft University of Technology. As of November 2020, he serves as Head of the Department of Sustainable Design Engineering. His research lies at the intersection of human-computer interaction, human computation, user modelling, and machine learning. He is interested in developing methods and tools that support the design, development, control, and operation of AI-enabled systems that are well-situated around actual human characteristics, values, intentions, and behaviours. By investigating the relationship between the science and practice of design, and the digital technology that fuels intelligent products, services, and systems, with his team he studies and builds novel Human-Centred Artificial Intelligence methods and tools that combine the cognitive and reasoning abilities of (groups of) individuals, with the computational powers of machines, and insights from large amount of heterogeneous data.

**Tat-Seng Chua** is the KITHCT Chair Professor at the School of Computing, National University of Singapore. He was the Founding Dean of the School from 1998-2000. His main research interest is in multimedia information retrieval and social media analytics. In particular, his research focuses on the extraction, retrieval and question-answering of text, video and live media arising from the Web and social networks. He is also the Director of a joint research Center between NUS and Tsinghua (NExT) to research into big unstructured multi-source multimodal data analytics. He was the recipient of ACM SIGMM Technical Achievement Award 2015. He has also organized and served as program committee member of numerous international conferences in the areas of computer graphics, multimedia and text processing. Amongst others, he is the chair of the steering committee of ACM ICMR and Multimedia Modeling conference series.

**Suzanne Little** is an Associate Professor (Senior Lecturer) at the School of Computing at DCU. Previously she has been a Senior Research Fellow at the Insight Centre for Data Analytics at DCU. She originally joined the CLARITY research centre at Dublin City University in February 2012 principally responsible for the SAVASA project (Standards based Approach to Video Archive Search and Analysis). In 2013, CLARITY evolved to become Insight where she worked on and managed a number of projects in video analytics, motion analysis and data collection. Prior to moving to Ireland in 2012, she worked in the UK, Germany, Italy and Australia. She completed her PhD at the University of Queensland, Australia. Suzanne's research interests include multimedia analytics, semantic search and data integration.

**Daniel Gatica-Perez** directs the Social Computing Group at Idiap, and is a professor at EPFL School of Engineering (STI) and

College of Humanities (CDH). His research integrates theories and methods from ubiquitous computing, social media, machine learning, and social sciences to understand human behavior in daily life and to create applications for social good. His current interests include: mobile crowdsourcing and social media analytics for social good, and crowdsourcing for cities. His recent research has been supported by the Swiss National Science Foundation, the Swiss Commission for Technology and Innovation, the European Commission, and industry partners.

**Kiyoharu Aizawa** received the B.E., the M.E. and the Dr.E. in electrical engineering all from the University of Tokyo in 1983, 1985, 1988 respectively. He is currently a Professor at the Department of Information and Communication Engineering of the University of Tokyo. He was a visiting assistant professor at University of Illinois from 1990 to 1992. His research interests have been in multimedia, image processing, computer vision, and he is currently engaged in multimedia lifelog, movie map and other multimedia related subjects. He received the 1987 Young Engineer Award and the 1990, 1998 Best Paper Award, the 1991 Achievement Award, 1999 Electronics Society Award, Fellow award 2012 from IEICE Japan, and the 1998 Fujio Frontier Award the 2002, 2005, 2009 Best Paper Award and Fellow from ITE Japan. He received IBM Japan Science Prize 2002. He is awarded IEEE Fellow. He is currently on the Editorial Board of ACM TOMM and IEEE MultiMedia. He served as the Editor in Chief of Journal of ITE Japan, a Senior Associate Editor of IEEE Trans. Image Processing an Associate Editor of IEEE Trans. IP, IEEE Trans. CSVT and IEEE Trans. Multimedia. He has served a number of international and domestic conferences; he was/is a General co-Chair of ACM Multimedia 2012, IEEE VCIP 2012 and ACM ICMR 2018. He served a president of IEICE Information and Systems Society, and a president of the Institute of Image Information and Television Engineers.

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