

# MoVid'16

Proceedings of the 8th International Workshop on  
Mobile Video (MoVid'16)

Klagenfurt, Austria  
May 13, 2016



Association for  
Computing Machinery

*Advancing Computing as a Science & Profession*

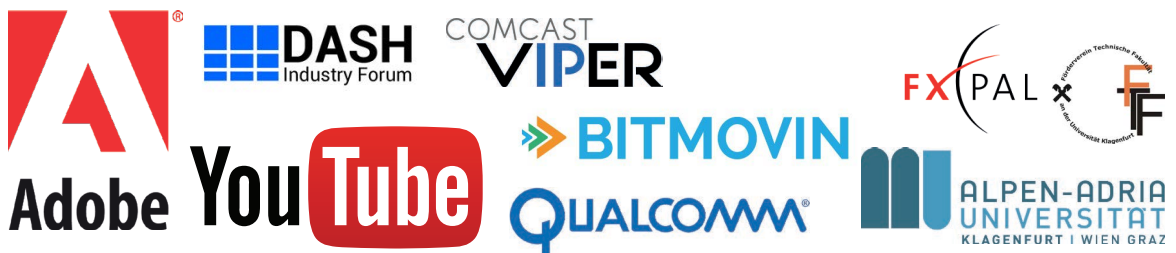


## Proceedings of the 26th International Workshop on Mobile Video (MoVid'16)

*Sponsored by:*



*Supported by:*



# Welcome to the Proceedings of the 8th ACM Workshop on Mobile Video



Association for  
Computing Machinery

*Advancing Computing as a Science & Profession*

**ACM COPYRIGHT NOTICE.** Copyright © 2016 by the Association for Computing Machinery, Inc. Permission to make digital or hard copies of part or all of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than ACM must be honored. Abstracting with credit is permitted. To copy otherwise, to republish, to post on servers, or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from Publications Dept., ACM, Inc., fax +1 (212) 869-0481, or [permissions@acm.org](mailto:permissions@acm.org).

For other copying of articles that carry a code at the bottom of the first or last page, copying is permitted provided that the per-copy fee indicated in the code is paid through the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, +1-978-750-8400, +1-978-750-4470 (fax).

## **Notice to Past Authors of ACM-Published Articles**

ACM intends to create a complete electronic archive of all articles and/or other material previously published by ACM. If you have written a work that was previously published by ACM in any journal or conference proceedings prior to 1978, or any SIG Newsletter at any time, and you do NOT want this work to appear in the ACM Digital Library, please inform [permissions@acm.org](mailto:permissions@acm.org), stating the title of the work, the author(s), and where and when published.

**ACM ISBN:** 978-1-4503-4356-5

# Foreword

We welcome you to the eight ACM Workshop on Mobile Video (MoVid), held in conjunction with ACM Multimedia Systems (MMSys) 2015 Conference on May 10-13, 2016 in Klagenfurt am Wörthersee, Austria.

There has been a tremendous increase in mobile video content generation and delivery. In this respect, the aim of the MoVid workshop series is to deepen the understanding of research, development and deployment challenges in building the Next Generation Mobile Video technologies. This year's workshop continues this tradition of presentation of novel research results and experimental reports on cutting edge issues of mobile video applications. MoVid 2016 gives researchers and practitioners a unique opportunity to share their perspectives with others who are interested in various aspects of mobile multimedia. From the set of papers submitted, we eventually selected five, resulting in an acceptance rate of 38%. MoVid 2016 then features a half-day workshop with a joint keynote with other workshops and two regular paper sessions.

The workshop program represents the efforts of many people. We are grateful for all the hard work of the technical program committee; they diligently reviewed the submissions and provided valuable feedback to the authors. We would also like to thank the authors who provided the content to this workshop. Finally, we thank the organizers of the ACM MMSys 2016 and the SIGMM for providing us with a great venue for this workshop.

We hope that you will find this program interesting and thought-provoking and that the symposium will provide you with a valuable opportunity to share ideas with other researchers and practitioners from institutions around the world.

**Qi Han**, Colorado School of Mines, USA

**Pål Halvorsen**, Simula Research Lab / University of Oslo, Norway

MoVid 2016 Co-Chairs

# Organization

Technical Program Chair: **Qi Han**, Colorado School of Mines, USA  
**Pål Halvorsen**, Simula Research Lab / University of Oslo, Norway

Publicity Chair: **Qiang Li**, Beijing Jiaotong University, China

Steering Committee: **Mainak Chatterjee**, University of Central Florida, USA  
**Nalini Venkatasubramanian**, University of California Irvine, USA

Technical Program Committee: **Kevin, Almeroth**, University of California - Santa Barbara, USA  
**Luis (Danny) Bathen**, Intel, USA  
**Surendar Chandra**, FXPAL, USA  
**Kuan-Ta Chen**, Academia Sinica, Taiwan  
**Songqing Chen**, George Mason University, USA  
**Hongxin Guo**, Huazhong University of Science and Technology, China  
**Mohamed Hefeeda**, Simon Fraser University, Canada  
**Cheng-Hsin Hsu**, National Tsing Hua University, Taiwan  
**Qiang Li**, Beijing Jiaotong University, China  
**Michael Riegler**, Simula Research Laboratory, Norway  
**Nabil J. Sarhan**, Wayne State University, USA  
**Gwendal Simon**, Telecom Bretagne, France  
**Magda El Zarki**, University of California, Irvine, USA  
**Roger Zimmermann**, National University of Singapore, Singapore

# Table of Contents

## **Video Through a Crystal Ball: Effect of Bandwidth Prediction Quality on Adaptive Streaming in Mobile Environments** (Page 1)

Tarun Mangla, Georgia Institute of Technology  
Nawanol Theera-Ampornpunt, Purdue University  
Mostafa Ammar, Georgia Institute of Technology  
Ellen Zegura, Georgia Institute of Technology  
Saurabh Bagchi, Purdue University

## **OSCAR: An Optimized Stall-Cautious Adaptive Bitrate Streaming Algorithm For Mobile Networks** (Page 7)

Ahmed H. Zahran, University College Cork  
Jason J Quinlan, University College Cork  
Darijo Raca, University College Cork  
Cormac J Sreenan, University College Cork  
Emir Halepovic, AT&T Labs – Research  
Rakesh K Sinha, AT&T Labs – Research  
Rittwik Jana, AT&T Labs – Research  
Vijay Gopalakrishnan, AT&T Labs – Research

## **Profiling Energy Consumption of DASH Video Streaming over 4G LTE Networks** (Page 13)

Jingyu Zhang, Shanghai Jiao Tong University  
Gan Fang, The Ohio State University  
Chunyi Peng, The Ohio State University  
Minyi Guo, Shanghai Jiao Tong University  
Sheng Wei, Adobe Research  
Viswanathan Swaminathan, Adobe Research

## **A Novel Framework For Scalable Video Streaming Over Multi-Channel Multi-Radio Wireless Mesh Networks** (Page 19)

Mohamed K. Abdel-Aziz, Nile University  
Ahmed H. Zahran, Cairo University  
Tamer ElBatt, Cairo University

## **Leveraging Transitions for the Upload of User-generated Mobile Video** (Page 25)

Stefan Wilk, TU Darmstadt  
Roger Zimmermann, NUS  
Wolfgang Effelsberg, TU Darmstadt