PROCEEDINGS

IS&T International Symposium on

Electronic Imaging

SCIENCE AND TECHNOLOGY

26 January 2020 — 30 January 2020 • Burlingame, CA, USA

Mobile Devices and Multimedia: Enabling Technologies, Algorithms, and Applications 2020

Editors: **David Akopian**, The Univ. of Texas at San Antonio (United States), and
Reiner Creutzburg, Technische Hochschule Brandenburg (Germany)

These papers represent the program of Electronic Imaging 2020,
held 26 January — 30 January 2020, at the Hyatt Regency San Francisco Airport in Burlingame, CA.

IS&T International Symposium on Electronic Imaging 2020
Mobile Devices and Multimedia: Enabling Technologies, Algorithms, and Applications

A03-1

Mobile Devices and Multimedia: Enabling Technologies, Algorithms, and Applications 2020

Conference overview

The goal of this conference is to provide an international forum for presenting recent research results on multimedia for mobile devices, and to bring together experts from both academia and industry for a fruitful exchange of ideas and discussion on future challenges. The authors are encouraged to submit work-in-progress papers as well as updates on previously reported systems. Outstanding papers may be recommended for the publication in the Journal Electronic Imaging or Journal of Imaging Science and Technology.

Awards

Best Paper
Best Student Paper

Conference Chairs: David Akopian, The University of Texas at San Antonio (United States); Reiner Creutzburg, Technische Hochschule Brandenburg (Germany)

Program Committee: John Adcock, FX Palo Alto Labororatory Inc. (United States); Sos Agaian, CSI City University of New York and The Graduate Center (CUNY) (United States); Faouzi Alaya Cheikh, Norwegian University of Science and Technology (Norway); Noboru Babaguchi, Osaka University (Japan); Nina Bhatti, Kokko Inc. (United States); C.L. Philip Chen, University of Macau (Macao); Chang Wen Chen, The State University of New York at Buffalo (United States); Matthew Cooper, FX Palo Alto Laboratory (United States); Kenneth Crisler, Motorola, Inc. (United States); Francesco De Natale, University degli Studi di Trento (Italy); Alberto Del Bimbo, University degli Studi di Firenze (Italy); Stefan Edlich, Technische Fachhochschule Berlin (Germany); Atanas Gotchev, Tampere University of Technology (Finland); Alan Hanjalic, Technische University Delft (the Netherlands); Alexander Hauptmann, Carnegie Mellon University (United States); Winston Hsu, National Taiwan University (Taiwan); Gang Hua, Stevens Institute of Technology (United States); Catalin Lacatus, Qualcomm Technologies, Inc. (United States); Xin Li, West Virginia University (United States); Qian Lin, HP Inc. (United States); Gabriel Marcu, Apple Inc. (United States); Vasileios Mezaris, Informatics and Telematics Institute (Greece); Chong-Wah Ngo, City University of Hong Kong (China); Sethuraman Panchanathan, Arizona State University (United States); Kari Pulli, Meta Company (United States); Yong Rui, Microsoft Corporation (China); Olli Silvén, University of Oulu (Finland); John Smith, IBM Thomas J. Watson Research Center (United States); Hari Sundaram, Arizona State University (United States); Jarmo Takala, Tampere University of Technology (Finland); Marius Tico, Apple Inc. (United States); Meng Wang, National University of Singapore (Singapore); Rong Yan, Facebook Inc. (United States); Jun Yang, Facebook Inc. (United States)

Paper authors listed as of 1 January 2020; refer to manuscript for final authors.
Titles that are not listed with the proceedings files were presentation-only.

A03-2

IS&T International Symposium on Electronic Imaging 2020
Mobile Devices and Multimedia: Enabling Technologies, Algorithms, and Applications

MOBILE DEVICES AND MULTIMEDIA: ENABLING TECHNOLOGIES, ALGORITHMS, AND APPLICATIONS 2020

Wednesday, January 29, 2020

Imaging Technologies

Session Chair: Reiner Creutzburg, Technische Hochschule Brandenburg (Germany)

9:05 – 10:10 am
Sandpebble A/B

9:05
Conference Welcome

9:10   MOBMU-205
Using ACES Look Modification Transforms (LMTs) in a visual effects production environment — Part 1: Rec.709 inputs and outputs, *Eberhard Hasche, Oliver Karaschewski, and Reiner Creutzburg, Technische Hochschule Brandenburg (Germany)*

9:30   MOBMU-206
Creating high-resolution 360-degree single-line 25K video content for modern conference rooms using film compositing techniques, *Eberhard Hasche, Dominik Benning, Oliver Karaschewski, and Reiner Creutzburg, Technische Hochschule Brandenburg (Germany)*

9:50   MOBMU-207
JAB code - A versatile polychrome 2D barcode, *Waldemar Berchtold and Huajian Liu, Fraunhofer SIT (Germany)*

10:00 am – 3:30 pm Industry Exhibition - Wednesday

10:10 – 10:50 am Coffee Break

Emerging Technologies

Session Chair: Eberhard Hasche, TH Brandenburg (Germany)

10:50 – 11:10 am
Sandpebble A/B

WITHDRAWN MOBMU-232
The human factor and social engineering - Personality traits and personality types as a basis for security awareness, *Nicole Malletzky, Michael Pilgermann, and Reiner Creutzburg, Technische Hochschule Brandenburg (Germany)*

Infrastructure Security

Session Chair: Eberhard Hasche, TH Brandenburg (Germany)

11:10 am – 12:10 pm
Sandpebble A/B

11:10   MOBMU-252
Measuring IT security, compliance, and data governance within small and medium-sized IT enterprises, *Andreas Johannsen, Daniel Kant, and Reiner Creutzburg, Technische Hochschule Brandenburg (Germany)*

11:30   MOBMU-253
Investigation of risks for critical infrastructures due to the exposure of SCADA systems and industrial controls on the internet based on the search engine Shodan, *Daniel Kant, Reiner Creutzburg, and Andreas Johannsen, Technische Hochschule Brandenburg (Germany)*

11:50   MOBMU-254
Towards sector-specific security operation, *Michael Pilgermann[1], Sören Werth[2], and Reiner Creutzburg[1]; [1] Technische Hochschule Brandenburg and [2] Technische Hochschule Lübeck (Germany)*

12:10   MOBMU-402
Situational Strategic Awareness Monitoring Surveillance System— Microcomputer and microcomputer clustering used for intelligent, economical, scalable, and deployable approach for safeguarding materials (JIST-first), *Kenly Maldonado and Steven Simske, Colorado State University (United States)*

12:30 – 2:00 pm Lunch

PLENARY: VR/AR Future Technology

Session Chairs: Radka Tezaur, Intel Corporation (United States), and Jonathan Phillips, Google Inc. (United States)

2:00 – 3:10 pm
Grand Peninsula Ballroom D

Quality Screen Time: Leveraging Computational Displays for Spatial Computing, *Douglas Lanman, director, Display Systems Research, Facebook Reality Labs (United States)*

For abstract and speaker biography, see page 7

3:10 – 3:30 pm Coffee Break

IoT, Security

Session Chair: Eberhard Hasche, TH Brandenburg (Germany)

3:30 – 4:50 pm
Sandpebble A/B

3:30   MOBMU-275
Security and privacy investigation of Wi-Fi connected and app-controlled IoT-based consumer market smart light bulbs, *Franziska Schwarz[1], Klaus Schwarz[1], Reiner Creutzburg[1], and David Akopian[2]; [1] Technische Hochschule Brandenburg (Germany) and [2] The University of Texas at San Antonio (United States)*

3:50   MOBMU-276
New methodology and checklist of Wi-Fi connected and app-controlled IoT-based consumer market smart home devices, *Franziska Schwarz[1], Klaus Schwarz[1], Reiner Creutzburg[1], and David Akopian[2]; [1] Technische Hochschule Brandenburg (Germany) and [2] The University of Texas at San Antonio (United States)*

IS&T International Symposium on Electronic Imaging 2020
Mobile Devices and Multimedia: Enabling Technologies, Algorithms, and Applications

A03-3

4:10   MOBMU-277

Conception and implementation of a course for professional training and education in the field of IoT and smart home security, *Michael Pilgermann, Thomas Bocklisch, and Reiner Creutzburg, Technische Hochschule Brandenburg (Germany)*

4:30   MOBMU-278

Conception and implementation of professional laboratory exercises in the field of open source intelligence (OSINT), *Klaus Schwarz, Franziska Schwarz, and Reiner Creutzburg, Technische Hochschule Brandenburg (Germany)*

Healthcare Technologies & Security

Session Chair: Eberhard Hasche, TH Brandenburg (Germany)

4:50 – 5:30 pm
Sandpebble A/B

4:50   MOBMU-303

Mobile head tracking for eCommerce and beyond, *Muratcan Cicek[1], Jinrong Xie[2], Qiaosong Wang[2], and Robinson Piramuthu[2]; [1]University of California, Santa Cruz and [2]eBay Inc. (United States)*

5:10   MOBMU-304

International biobanking interface service — A concept for health sciences in the digital age, *Christian Linke[1], Rene Mantke[1], and Reiner Creutzburg[2]; [1]Brandenburg Medical School Theodor Fontane and [2]Technische Hochschule Brandenburg (Germany)*

Mobile Devices and Multimedia: Enabling Technologies, Algorithms, and Applications 2020 Interactive Papers Session

5:30 – 7:00 pm
Sequoia
The following works will be presented at the EI 2020 Symposium Interactive Papers Session.

MOBMU-331

AI-based anomaly detection for cyberattacks on Windows systems - Creation of a prototype for automated monitoring of the process environment, *Benjamin Yüksel, Klaus Schwarz, and Reiner Creutzburg, Technische Hochschule Brandenburg (Germany)*

MOBMU-332

An implementation of drone-projector: Stabilization of projected image, *Eunbin Choi, Younghyeon Park, and Byeungwoo Jeon, Sungkyunkwan University (Republic of Korea)*

MOBMU-333

Cybersecurity and forensic challenges - A bibliographic review 2020, *Reiner Creutzburg, Technische Hochschule Brandenburg (Germany)*

MOBMU-334

MessageSpace. Messaging systems for health research, *Thinh Vo[1], Sahak Kaghyan[1], Rodrigo Escobar[1], David Akopian[1], Deborah Parra-Medina[2], and Laura Esparza[2]; [1]The University of Texas at San Antonio and [2]University of Texas Health Science Center at San Antonio (United States)*

MOBMU-335

Performance analysis of mobile cloud architectures for mHealth app, *Devasena Inupakutika and David Akopian, The University of Texas at San Antonio (United States)*

MOBMU-336

Conception of a secure remote maintenance procedure using dedicated hardware, *Klaus Schwarz and Reiner Creutzburg, Technische Hochschule Brandenburg (Germany)*

5:30 – 7:00 pm EI 2020 Symposium Interactive Posters Session

5:30 – 7:00 pm Meet the Future: A Showcase of Student and Young Professionals Research

A03-4

IS&T International Symposium on Electronic Imaging 2020
Mobile Devices and Multimedia: Enabling Technologies, Algorithms, and Applications