

# **IS&T International Symposium on Electronic Imaging Science and Technology 2020**

**Food and Agricultural Imaging Systems  
2020**

**Burlingame, California, USA  
26 - 30 January 2020**

## **Editors:**

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# FOOD AND AGRICULTURAL IMAGING SYSTEMS 2020

Tuesday, January 28, 2020

IMAWM-114

7:30 – 8:45 am Women in Electronic Imaging Breakfast;  
pre-registration required

## Drone Imaging I

JOINT SESSION

Session Chairs: Andreas Savakis, Rochester Institute of Technology (United States) and Grigorios Tsagkatakis, Foundation for Research and Technology (FORTH) (Greece)

8:45 – 10:10 am

Cypress B

This session is jointly sponsored by: Food and Agricultural Imaging Systems 2020, and Imaging and Multimedia Analytics in a Web and Mobile World 2020.

8:45

### Conference Welcome

8:50

IMAWM-084

**A new training model for object detection in aerial images**, Geng Yang<sup>1</sup>, Yu Geng<sup>2</sup>, Qin Li<sup>1</sup>, Jane You<sup>3</sup>, and Mingpeng Cai<sup>1</sup>; <sup>1</sup>Shenzhen Institute of Information Technology (China), <sup>2</sup>Shenzhen Shangda Xinzhi Information Technology Co., Ltd. (China), and <sup>3</sup>The Hong Kong Polytechnic University (Hong Kong)...N/A

9:10

IMAWM-085

**Small object bird detection in infrared drone videos using mask R-CNN deep learning**, Yasmin Kassim<sup>1</sup>, Michael Byrne<sup>1</sup>, Cristy Burch<sup>2</sup>, Kevin Mote<sup>2</sup>, Jason Hardin<sup>2</sup>, and Kannappan Palaniappan<sup>1</sup>; <sup>1</sup>University of Missouri and <sup>2</sup>Texas Parks and Wildlife (United States)...N/A

9:30

IMAWM-086

**High-quality multispectral image generation using conditional GANs**, Ayush Soni, Alexander Loui, Scott Brown, and Carl Salvaggio, Rochester Institute of Technology (United States)...N/A

9:50

IMAWM-087

**Deep Ram: Deep neural network architecture for oil/gas pipeline right-of-way automated monitoring**, Ruixu Liu, Theus Aspiras, and Vijayan Asari, University of Dayton (United States)...N/A

10:00 am – 7:30 pm Industry Exhibition - Tuesday

10:10 – 10:30 am Coffee Break

## Drone Imaging II

JOINT SESSION

Session Chairs: Vijayan Asari, University of Dayton (United States) and Grigorios Tsagkatakis, Foundation for Research and Technology (FORTH) (Greece)

10:30 – 10:50 am

Cypress B

This session is jointly sponsored by: Food and Agricultural Imaging Systems 2020, and Imaging and Multimedia Analytics in a Web and Mobile World 2020.

**LambdaNet: A fully convolutional architecture for directional change detection**, Bryan Blakeslee and Andreas Savakis, Rochester Institute of Technology (United States)...N/A

## KEYNOTE: Remote Sensing in Agriculture I

JOINT SESSION

Session Chairs: Vijayan Asari, University of Dayton (United States) and Mohammed Yousefhussein, General Electric Global Research (United States)

10:50 – 11:40 am

Cypress B

This session is jointly sponsored by: Food and Agricultural Imaging Systems 2020, and Imaging and Multimedia Analytics in a Web and Mobile World 2020.

FAIS-127

**Managing crops across spatial and temporal scales - The roles of UAS and satellite remote sensing**, Jan van Aardt, professor, Chester F. Carlson Center for Imaging Science, Rochester Institute of Technology (United States)...N/A

## KEYNOTE: Remote Sensing in Agriculture II

JOINT SESSION

Session Chairs: Vijayan Asari, University of Dayton (United States) and Mohammed Yousefhussein, General Electric Global Research (United States)

11:40 am – 12:30 pm

Cypress B

This session is jointly sponsored by: Food and Agricultural Imaging Systems 2020, and Imaging and Multimedia Analytics in a Web and Mobile World 2020.

FAIS-151

**Practical applications and trends for UAV remote sensing in agriculture**, Kevin Lang, general manager, Agriculture, PrecisionHawk (United States)...N/A

12:30 – 2:00 pm Lunch

**PLENARY: Automotive Imaging**

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

**2:00 – 3:10 pm**

Grand Peninsula Ballroom D

**Imaging in the Autonomous Vehicle Revolution**, Gary Hicok, senior vice president of hardware development, NVIDIA Corporation (United States)...N/A

3:10 – 3:30 pm Coffee Break

**Food and Agricultural Imaging**

Session Chairs: Mustafa Jaber, NantVision Inc. (United States); Grigorios Tsagakatakis, Foundation for Research and Technology (FORTH) (Greece); and Mohammed Yousef Hussien, General Electric Global Research (United States)

**3:30 – 5:30 pm**

Regency B

3:30 FAIS-171

**Fish freshness estimation through analysis of multispectral images with convolutional neural networks**, Grigorios Tsagakatakis<sup>1</sup>, Savas Nikolidakis<sup>2</sup>, Eleni Petra<sup>3</sup>, Argyris Kapantagakis<sup>2</sup>, Kriton Grigorakis<sup>2</sup>, George Katselis<sup>4</sup>, Nikos Vlahos<sup>4</sup>, and Panagiotis Tsakalides<sup>1</sup>; <sup>1</sup>Foundation for Research and Technology (FORTH), <sup>2</sup>Hellenic Centre for Marine Research, <sup>3</sup>Athens Research & Innovation Center, and <sup>4</sup>University of Patras (Greece)...1

3:50 FAIS-172

**Deep learning based fruit freshness classification and detection with CMOS image sensors and edge processors**, Tejaswini Ananthanarayana<sup>1,2</sup>, Ray Ptucha<sup>1</sup>, and Sean Kelly<sup>2</sup>; <sup>1</sup>Rochester Institute of Technology and <sup>2</sup>ON Semiconductor (United States)...5

4:10 FAIS-173

**Assessing the use of smartphones to determine crop ripeness**, Katherine Carpenter and Susan Farnand, Rochester Institute of Technology (United States)...11

4:30 FAIS-174

**Cattle identification and activity recognition by surveillance camera**, Haike Guan, Naoki Motohashi, Takashi Maki, and Toshifumi Yamaai, Ricoh Company, Ltd. (Japan)...16

4:50 FAIS-175

**High-speed imaging technology for online monitoring of food safety and quality attributes: Research trends and challenges**, Seung-Chul Yoon, US Department of Agriculture-Agricultural Research Service (United States)...N/A

5:10 FAIS-176

**A survey on deep learning in food imaging applications**, Mustafa Jaber<sup>1</sup>, Grigorios Tsagakatakis<sup>2</sup>, and Mohammed Yousef Hussien<sup>3</sup>; <sup>1</sup>NantOmics (United States), <sup>2</sup>Foundation for Research and Technology (FORTH) (Greece), and <sup>3</sup>General Electric Global Research (United States)...N/A

5:30 – 7:30 pm Symposium Demonstration Session

**Wednesday, January 29, 2020**

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

10:10 – 11:00 am Coffee Break

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)...N/A

3:10 – 3:30 pm Coffee Break

**Food and Computer Vision**

Session Chair: Mustafa Jaber, NantVision Inc. (United States)

**4:30 – 5:30 pm**

Cypress B

This is a shared listing for a related Imaging and Multimedia Analytics in a Web and Mobile World 2020 Conference session. Refer to the IMAWM Conference program for details.

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