

IST 2021

August 24-26, 2021
New York, USA
Virtual Conference

IEEE International Conference on IMAGING SYSTEMS & TECHNIQUES



IST 2021 CONFERENCE PROGRAM

SPONSORS AND ORGANIZERS

Please visit website for
more information!
ist2021.ieee-ims.org



Table of Contents

Message from the Chairman 3

IEEE IST 2021 Organizers..... 4

Tuesday August 24, 2021 7

International School of Imaging Sessions..... 7

Tuesday, August 24, 2021 – Technical Sessions 9

Wednesday, August 25, 2021 – Technical Sessions..... 10

Thursday, August 26, 2021 – Technical Sessions 15

Message from the Chairman

On behalf of the Technical and Local Committee of the 2021 IEEE International Conference on Imaging Systems and Techniques (IST 2021) and IEEE International School on Imaging, I welcome you to the virtual IST conference, 24-26 August, New York.

Historically, this is the fifteenth consecutive year, following the successful IST events held previously in Stresa, Italy (2004), Niagara Falls, Canada (2005), Minori, Italy (2006), Krakow, Poland (2007), Chania, Greece (2008), Shenzhen, China (2009), Thessaloniki, Greece (2010), Penang Island, Malaysia (2011), Manchester, UK (2012), Beijing, China (2013), Santorini, Greece (2014), Macau, China (2015), Chania, Greece (2016), Beijing, China (2017), Krakow, Poland (2018), Abu Dhabi, UAE (2019), where experts from all over the world meet to trigger an in-depth discussion of imaging methodologies and its applications shaping the future, and identifying emerging imaging trends.

This year, scientists and engineers from all over the world meet to explore the design principles, development and applications of new imaging technologies and computer visualization techniques. The use of machine learning and artificial intelligence to analyze and interpret imaging data is the epicenter of this conference. In a rapidly changing global economy, experiencing an unparalleled integration of science and technology with machine learning and artificial intelligence; let us see this event as unique opportunity not only to exchange and disseminate knowledge but also bridge multidisciplinary areas like engineering and science with health science, robotics, quantum cognition, exploration of Space and Industry 4.0.; generating new knowledge while establishing global collaborative multidisciplinary opportunities, by tightening collaborations among industry, academia, and healthcare industry.

I would like to thank the TC-19 on Imaging Measurements and Systems Technical Committee, IEEE Instrumentation and Measurement Society, IEEE NY Chapter, IEEE NY Chapter of Systems, Man, Cybernetics (SMC) Society, IEEE NY Chapter of Computer Society, the local organizers of the Conference, the IST Organizing and Steering Committees, for the outstanding organization of the event Special thanks Conference Catalysts, LLC, Administrators of the IST and the IEEE School of Imaging, for their outstanding and meritorious efforts to successfully administrate these two major events. Many thanks go to the dedicated reviewers which did an excellent job to preserve quality and promote academic excellence.

I hope you find the 2021 IEEE International Conference on Imaging Systems and Techniques (IST2021) and the IEEE International School on Imaging a rewarding opportunity for advancement of knowledge as well as a way to generate unique global collaborative opportunities among industry, academia, and healthcare professionals.

George K. Giakos, Fellow of the IEEE

General Chairman of the IEEE IST Conference

New York, United States

IEEE IST 2021 Organizers

General and Technical Program Chair

George Giakos, Manhattan College, USA

General Co-Chairs

Prof. Lijun Xu, Beihang University, China

Prof. Sos Agaian, The Graduate Center, CUNY, USA

Prof. Matteo Pastorino, University of Genoa, Italy

Honorary Co-Chairs

Prof. Wuqiang Yang, University of Manchester, United Kingdom

Prof. Michalis Zervakis, Technical University of Crete, Greece

Prof. Lijun Xu, Beihang University, China

Special Session Co-Chairs

Prof. Wuqiang Yang, University of Manchester, UK

Prof. Jacob Scharcanski, UFRGS, Brazil

Dr. Bhargava Chinni, University of Rochester, USA

Technical Program Co-Chairs

Prof. Lihui Peng, Tsinghua University, China

Prof. Ahmed Refaey Hussein, Manhattan College, USA

Dr. Chi-Hung Hwang, National Applied Research Laboratories, Taiwan

Prof. Luay Fraiwan, Abu Dhabi University, United Arab Emirates

Dr. Suman Shrestha, Varex Imaging Corporation on Semiconductor, USA

Dr. Keerthi Valluru, University of California, USA

Public Relations and Communications Chair

Prof. Ahmed Refaey, Hussein, Manhattan College, USA

Publication Co-Chairs

Prof. Dimitris Iakovidis, University of Thessaly, Greece

Prof. Andrzej Skalski, AGH University of Science & Technology, Poland

Local Organizing Committee

Prof. Sos Agajan, The Graduate Center, CUNY, USA

Prof. Ping-Tsai Chung, Long Island University, USA

Prof. Frank Hsu, Fordham University, USA

Prof. Zheng Peng, The City College of New York, USA

Prof. Neo Antoniadis, CUNY, USA

Prof. Georgios Kollias, IBM, USA

Dr. Osama Musa, Ashland Global Holdings, USA

Anthony Beninati, Manhattan College, USA

Nicolas Douard, Manhattan College, USA

Martin Nowak, Manhattan College, USA

Prof. Wafa Elmannan, Manhattan College, USA

Prof. Yi Wang, Manhattan College, USA

Prof. Radwa Sultan, Manhattan College, USA

Prof. Ahmed Refaey Hussein, Manhattan College, USA

John Healy, Manhattan College, USA

Alec Puran, Manhattan College, USA

Plenary Chair

Prof. Antonios Gasteratos, Democritus University of Thrace (DUTH), Greece

Dr. Rui Fan, University of California, USA

Innovation Program Chairs

Dr. Tannaz Farrahi, University of Virginia, USA
Prof. Cesare Svelto, Polytechnic of Milan, Italy
Martin Nowak, Manhattan College, USA

IEEE International School of Imaging Co-Chairs

Prof. Lijun Xu, Beihang University, China
Prof. Sos Agaian, The Graduate Center, CUNY, USA
Prof. Matteo Pastorino, University of Genoa, Italy

Student Outreach and STEM Initiatives

Chairs

Shiva Maleki Varnosfaderani, Wayne State University, USA
Prof. Radwa Sultan, Manhattan College, USA
Prof. Kanchan Lata Kashyap, Indian Institute of Information Technology, VIT Bhopal University, India

Advisory Board

Prof. Sos Agajan, The Graduate Center, CUNY, USA
Prof. Michalis Zervakis, Technical University of Crete, Greece
Prof. Lijun Xu, Beihang University, China
Prof. Wuqiang Yang, University of Manchester, UK
Dr. Chi-Hung Hwang, National Applied Research Laboratories, Taiwan
Dr. Kostas Marias, Foundation for Research and Technology, Greece
Prof. Ping-Tsai Chung, Long Island University, USA
Prof. Frank Hsu, Fordham University, USA
Prof. Zheng Peng, The City College of New York, USA
Prof. M. Nizamettin Erduran, Istanbul Sabahattin Zaim University, Turkey
Dr. Keerthi Valluru, University of California, USA
Dr. Bhargava Chinni, University of Rochester, USA
Giorgos Giannakis, FORTH, Greece
Prof. Ayman El-Baz, University of Louisville, USA
Prof. Serge Demidenko, Massey University, New Zealand
Prof. Jacob Scharcanski, UFRGS, Brazil
Prof. Dimitris Iakovidis, University of Thessaly, Greece
Prof. Bing Yu, Marquette University, USA
Prof. Dimitrios A. Karras, National & Kapodistrian University of Athens, Greece
Prof. Mohammed Ghazal, Abu Dhabi University, UAE
Dr. Kostas Marias, Foundation for Research and Technology, Greece
Prof. Lihui Peng, Tsinghua University, China
Prof. Antonios Gasteratos, Democritus University of Thrace (DUTH), Greece
Prof. Lazaros Nalpantidis, Aalborg University CPH, Denmark
Dr. Rui Fan, University of California, USA
Prof. Manish Kumar Bajpai, Indian Institute of Information Technology, Design and Manufacturing Jabalpur, India
Prof. Sarhan Musa, Prairie View A&M University, USA
Dr. Koushendra Kumar Singh, National Institute of Technology, Jamshedpur, India
Aditi Deshpande, University of Arizona, USA
Prof. Yi Wang, Manhattan College, USA
Prof. Michalis Zervakis, Technical University of Crete, Greece
Prof. Andrzej Skalski, AGH University of Science & Technology, Poland
Prof. Matteo Pastorino, University of Genoa, Italy
Dr. Richard Picard, ARCON Corporation, USA
Dr. Cesare Svelto, Polytechnic of Milan, Italy
Dr. George Livanos, Technical University of Crete, Greece

Steering Committee

Prof. Yi Wang, Manhattan College, USA
Prof. Ahmed Hussein, Manhattan College, USA

Prof. Manolis Spanakis, FORTH (ITE), Greece
Dr. George Livanos, Technical University of Crete, Greece
Prof. Evangelos Boukas, Aalborg University CPH, Denmark
Dr. Christos Bolakis, Hellenic Naval Academy, Greece
Zhang Cao, Beihang University, China
Prof. Yixin Ma, Shanghai Jiao Tong University, China
Prof. Zhang Cao, Beihang University, China
Prof. Kanchan Lata Kashyap, Indian Institute of Information, VIT Bhopal University, India
Dr. Fotios Konstantinidis, Democritus University of Thrace – DUTH, Greece
Siva Maleki Varnosfaderani, Wayne State University, USA
Dr. Sakkalis Vaggelis, Foundation for Research and Technology – Hellas (FORTH), Greece
Prof. Radwa Sultan, Manhattan College, USA
Prof. Mohammed Ghazal, Abu Dhabi University, United Arab Emirates
Dr. Tannaz Farrahi, University of Virginia, USA
Paniz Forouran, University of Tehran, Iran
Prof. Neo Antoniadis, CUNY, USA
Prof. Wafa Elmannai, Manhattan College, USA
Charles Barnes, Manhattan College, USA
Alexandros Kerwick, Northeastern University, USA
Prof. Mohd. Zaid Abdullah, Universiti Sains Malaysia, Malaysia
Saurabh Kumar, Institute for Dataability Science, Osaka University, Japan

Conference Management

Conference Catalysts, LLC

**All time are listed in EDT*

Tuesday August 24, 2021

6:00 AM- 6:10 AM

Welcome Message from the Provost Steven Schreiner
Manhattan College, NY

6:10 AM-6:20 AM

Welcome Message from Robert Pellegrino, IEEE New York Section Chair, Region 1

6:20 AM-6:30 AM

Welcome Message from Dr. Frank Hsu, Local Organizing Committee,
Clavius Distinguished Professor of Science Professor of Computer and Information Science
Fordham University

6:30 AM-6:45 AM

Welcome Message from the IEEE IST General Chairman

International School of Imaging Sessions

7:00 AM-7:45 AM

Lecture 1: VISUAL PERCEPTION-DRIVEN IMAGE QUALITY MEASUREMENTS: PRINCIPLES, FUTURE TRENDS, AND APPLICATIONS

Sos Agaian, Ph.D., IEEE Fellow, Distinguished Professor, Graduate Center/CSI, CUNY, New York, NY, USA

7:45 AM-8:30 AM

Lecture 2: “APPLICATIONS AND TRENDS FOR USE OF 3D ULTRASOUND IN IMAGE-GUIDED INTERVENTIONS AND POINT OF CARE DIAGNOSTIC APPLICATIONS”

Aaron Fenster, Ph.D., IEEE Fellow, Professor, The Western University, London, Ontario, Canada

8:30 AM-9:15 AM

Lecture 3: “MICROWAVE IMAGING TECHNIQUES AND APPLICATIONS: FROM BASIC CONCEPTS TO RECENT DEVELOPMENTS”

Matteo Pastorino, Ph.D., IEEE Fellow, Professor, University of Genoa, Genoa, Italy
Andrea Randazzo, Ph.D., Professor, University of Genoa, Genoa, Italy

9:15 AM -10:00

Lecture 4: “TOWARDS MORE ROBUST AUTONOMOUS SYSTEMS THROUGH AUTOMATING IMAGE ANNOTATION

Lazaros Nalpantidis, Ph.D., Associate Professor, Head of Studies MSc Autonomous Systems, Technical University of Denmark, Denmark

10:00 AM-10:45 AM

Lecture 5: “INNOVATIONS IN UNRESOLVED RESIDENT SPACE OBJECTS (RSO)s DETECTION: FROM ANALOG TO POLARIMETRIC NEUROMORPHIC DETECTORS”

George Giakos, Ph.D., IEEE Fellow, Manhattan College, NY, USA

10:45: AM-11:00 AM

Break

11:00 AM-11:45 AM

Lecture 6: “MEDICAL IMAGE SEGMENTATION, RADIOMICS AND RADIO-TRANSCRIPTOMICS: APPLICATIONS IN CANCER DIAGNOSIS”

Michalis E. Zervakis, Ph.D., Professor and Vice Rector, Technical University of Crete, Greece

11:45 AM-12:30 PM

Lecture 7: "NAVIGATING INNOVATION IN GLOBAL MARKETS"

Osama Musa, Ph.D., Senior Vice President and Chief Technology Officer, Ashland Global Holdings, NJ, USA

12:30 PM-1:15 PM

Lecture 8: "QUANTUM STATE TOMOGRAPHY: AN INTEGRATED APPROACH

Georgios Kollias, Ph.D., Research Staff Member (RSM), IBM T.J. Watson Research, New York, USA

1:15 PM-2:00 PM

Lecture 9: "QUANTIFYING UNCERTAINTY IN MACHINE LEARNING BASED MEASUREMENT"

Shervin Shirmohammadi, Ph.D., IEEE Fellow, University of Ottawa, Ottawa, Canada

2:00 PM-2:45 PM

Lecture 10: "EMBEDDED VISION SYSTEMS FOR EMERGENCY MANAGEMENT TASKS"

Antonios Gasteratos, Ph.D., IET Fellow, Professor, Director: Laboratory of Robotics and Automation, Democritus University of Thrace, Greece

2:45 PM-3:00 PM

Break

Tuesday, August 24, 2021 – Technical Sessions

3:00 PM - 4:00 PM

Computer Vision and Artificial Intelligence

Session Chair: Yi Wang, Manhattan College

3:00 PM

Monocularly Generated 3D High Level Semantic Model by Integrating Deep Learning Models and Traditional Vision Techniques

Steven J Alsheimer (CUNY Graduate Center, USA); Zhigang Zhu (The City University of New York, USA)

3:15 PM

Comparison of One-Stage Object Detection Models for Weed Detection in Mulched Onions

Paolo Rommel P Sanchez (Rowan University, USA & University of the Philippines Los Baños, Philippines); Hong Zhang (Rowan University, USA); Shen-Shyang Ho (Rowan University, Glassboro, NJ, USA); Eldon de Padua (Visayas State University, Philippines)

3:30 PM

Wheat Spike Counting Using Regression and Localization Approaches

Amirhossein Zaji (University of British Columbia, Canada); Zheng Liu (University of British Columbia Okanagan, Canada); Gaozhi (George) Xiao and Pankaj Bhowmik (National Research Council Canada, Canada); Jatinder Sangha and Yuefeng Ruan (Agriculture and Agri-Food, Canada)

3:45 PM

Concrete Dam Inspection with UAV Imagery and DCNN-based Object Detection

Alexandre R Mello (SENAI Innovation Institute for Embedded Systems, Brazil); Flávio Gabriel Gabriel Oliveira Barbosa (SENAI Institute of Innovation in Embedded Systems, Brazil & Federal University of Santa Catarina (UFSC), Brazil); Murilo Larroza Fonseca (SENAI Innovation Institute for Embedded Systems, Brazil); Camila Smirdele (Dona Francisca Energética S.A., Brazil)

Wednesday, August 25, 2021 – Technical Sessions

6:00 AM - 7:00 AM

Industrial Tomography Techniques and Applications I

Session Chairs: Lijun Xu (Beihang University, China)

Yixin Ma (Shanghai Jiao Tong University, China)

6:00 AM

The Importance of FEM model for Linearized EIT Image Reconstruction

Mingzhu Zhang (Shanghai Jiao Tong University, China); Xue Shan (Renji Hospital Affiliated to Shanghai Jiaotong University School of Medicine, China); Hui Qin (Shanghai Jiao Tong University, China); Kong Zhibin (Shanghai Sixth People's Hospital, China); Yixin Ma (Shanghai Jiao Tong University, China)

6:15 AM

Flexible tactile sensing based on electrical resistance tomography and wavelet image fusion

Zhao Haoyu (The University of Manchester); Wuqiang Yang (The University of Manchester, United Kingdom (Great Britain))

6:30 AM

Research on cross-section gas content evaluation based on ultrasonic tomography system

Nan Li (Northwestern Polytechnical University & Beijing University of Technology, China); Jingyi Hu, Lina Wang and Fan Liu (Northwestern Polytechnical University, China)

6:45 AM

RBF-based reconstruction method for tomographic imaging of temperature and water vapor concentration in flames

Xin Gao, Zhang Cao, Yu Tian and Lijun Xu (Beihang University, China)

7:00 AM - 8:00 AM

Volumetric Imaging and Applications

Session Chair: Nicolas Douard (Manhattan College)

7:00 AM

Temperature imaging of Counterflow Diffusion Flames by using TDLAS Tomography

Zhaoyu Cai, Zhang Cao, Heng Xie and Lijun Xu (Beihang University, China)

7:15 AM

Parameter Inversion Based on Levenberg-Marquardt Algorithm for Layered Formation Using Electromagnetic Wave Resistivity Tool

Rui Zhang, Lijun Xu, Shijie Sun, Jiangtao Sun, Yuedong Xie and Peng Suo (Beihang University, China); Weining Ni and Xin Li (Sinopec Research Institute of Petroleum Engineering, China)

7:30 AM

Methodology of Volume Measurement by Depth Imaging Technology

Yunqi Sun, Yuxin Zhao, Yuanhao Jin and Qunqing Li (Tsinghua University, China); Suyi Zhang, Miao Liu, Feng Lin and Mengyang Huang (Luzhou Laojiao Co. Ltd., China)

8:00 AM - 9:00 AM

Novel Detection and Imaging Systems

Session Chair: Lihui Peng (Tsinghua University, China)

8:00 AM

Smartphone-Based Imaging System and Method for Particle Size and Shape Measuring in Baijiu Brewing Process

Shanglin Yang and Lihui Peng (Tsinghua University, China)

8:15 AM

General-purpose Abandoned Object Detection Method without Background Modeling

Weiping Liu (North China Electric Power University, China)

8:30 AM

Sequence-based Mapping for Probabilistic Visual Loop-closure Detection

Konstantinos A. Tsintotas and Loukas Bampis (Democritus University of Thrace, Greece); An Shan (JD.com, China); George Fragulis (University of Western Macedonia, Greece); Spyridon G. Mouroutsos and Antonios Gasteratos (Democritus University of Thrace, Greece)

8:45 AM

Property Similarity Line Segment Detector

Juncan Deng, Jintao Cheng, Weibo Cai and Yubin Zhou (South China Normal University, China); Rui Fan (Tongji University, China); Kaiqing Luo (South China Normal University, China)

9:00 AM - 10:00 AM

Efficient Electrooptical Detection Systems

Session Chair: George K. Giakos (Manhattan College, USA)

9:00 AM

Space Debris Detection and Resident Space Object (RSO) Classification using Polarimetric Discriminants

M. Nowak, A. Beninati, N. Douard, A. Puran, C. Barnes, G.K. Giakos (Manhattan College, USA), A. Kerwick (Northeastern University, USA).

9:15 AM

An FPGA-based on-chip system for real-time single pixel imaging

Hongyu Zhang, Lijun Xu, Heng Xie and Zhang Cao (Beihang University, China)

9:30 AM

Continuous Zoom Optical Imaging System Based on Liquid Compound Eye

Yi Zheng (Beihang University, China); Chao Liu (BeiHang University, China); Qiong-Hua Wang (Beihang University, China)

9:45 AM

Single frontal projection 2D/3D switchable display based on integral imaging

Qiang Li, Yan Zhong, Wei He and Huan Deng (Sichuan University, China)

10:00 AM - 11:00 AM

Computer Visualization and Augmented Machine Learning Techniques

Session Chair: Ahmed Refaey (Manhattan College, USA & Western University, Canada)

10:00 AM

On IoT Edge Devices: Manifold Unsupervised Learning for SoM Platforms

Ahmed Refaey (Manhattan College, USA & Western University, Canada)

10:15 AM

Comparing Speed Reduction of Adversarial Defense Systems on Deep Neural Networks

Andrew Bowman and Xin Yang (Middle Tennessee State University, USA)

10:30 AM

Machine Learning Enabled Fracture Network Imaging Using The Wirelessly powered Smart Microchip Proppants Technology

Vuong Van Pham, Amirmasoud Kalantari Dahaghi and Shahin Negahban (University of Kansas, USA); William Fincham (The US Department of Energy, USA); Aydin Babakhani (UCLA, USA)

10:45 AM

Deep Learning-based Method for Denoising and Image Enhancement in Low-Field MRI

Dang Bich Thuy Le, Meredith Sadinski, Aleksandar Nacev, Ram Narayanan and Dinesh Kumar (Promaxo, USA)

11:00 AM - 12:00 PM

Classification and Identification Techniques

Session Chair: Michalis Zervakis (Technical University of Crete, Greece)

11:00 AM

Satellite image classification methods and techniques: A survey

Hafsa Ouchra, (Laboratory of Information Technology and Modeling LTIM, Hassan II University, Morocco)

Abdessamad Belangour (University Hassan II, Morocco)

11:15 AM

Analyzing Person classification based on cross-view gait posture discriminative features

Prakash Dayanand Bhise (Savitribai Phule Pune University & Pune Institute of Computer Technology, India); Balwant

Sonkamble (Savitribai Phule Pune University, India)

11:30 AM

Dual-Branch CNN for the Identification of Recyclable Materials

Antonios Vogiatzis, Georgios Chalkiadakis and Konstantia Moirogiorgou (School of Electrical and Computer Engineering, Technical University of Crete, Greece); George Livanos (Technical University of Crete, Greece); Maria Papadogiorgaki

(Digital Image and Signal Processing Laboratory, Greece); Michalis Zervakis (Technical University of Crete, Greece)

11:45 AM

A Novel One-vs-Rest Classification Framework for Mutually Supported Decisions by Independent Parallel Classifiers

Antonios Vogiatzis, Georgios Chalkiadakis and Konstantia Moirogiorgou (School of Electrical and Computer Engineering, Technical University of Crete, Greece); Michalis Zervakis (Technical University of Crete, Greece)

12:00 PM - 1:00 PM

Computer Visualization and Processing Techniques

Session Chair: Fotios K. Konstantinidis, and Antonios Gasteratos (Democritus University of Thrace, Greece)

12:00 PM

Computer Vision-Based Guidance Assistance Concept for Plowing Using RGB-D Camera

Erkin Türköz, Ertug Olcay and Timo Oksanen (Technical University of Munich, Germany)

12:15 PM

Human Tracking in Top-view Fisheye Images with Color Histograms via Deep Learning Detection

Haggui Olfa (IMT Mines Alés, France); Marina Vert, Bastien Brieussel and Kieran McNamara (EuroMov Digital Health in Motion, IMT Mines Ales, France); Baptiste Magnier (EuroMov Digital Health in Motion, Univ Montpellier, IMT Mines Ales, Ales, France)

12:30 PM

Video logarithmic tone mapping operator with automatic calculation of the logarithmic function

Cedric Walbrecq (IMT mines d'Alès, France); Isabelle Marc (IMT mines alès, France); Dominique Lafon-Pham (EUROMOV DHM, Univ Montpellier, IMT Ales, Alès, France); Baptiste Magnier (EuroMov Digital Health in Motion, Univ Montpellier, IMT Mines Ales, Ales, France)

12:45 PM

The role of machine vision in industry 4.0: A textile manufacturing perspective

Fotios K. Konstantinidis, Ioannis Kansizoglou, Konstantinos A. Tsintotas, Spyridon G. Mouroutsos and Antonios Gasteratos (Democritus University of Thrace, Greece)

1:00 PM - 2:00 PM

UAVs and Robotic Platforms

Session Chairs: Konstantinos A. Tsintotas, and Antonios Gasteratos (Democritus University of Thrace, Greece)

1:00 PM

Towards an Autonomous, Visual Inspection-aware 3D Exploration and Mapping System for Water Ballast Tanks of Marine Vessels

Rune Y Brogaard (Technical University of Denmark & FORCE Technology, Denmark); Rasmus Andersen and Luka Kovac (Technical University of Denmark, Denmark); Marcin Zajaczkowski (FORCE Technology, Denmark); Evangelos Boukas (Technical University of Denmark, Denmark)

1:15 PM

Safe UAV landing: A low-complexity pipeline for surface conditions recognition

Konstantinos A. Tsintotas, Loukas Bampis, Anastasios Taitzoglou, Ioannis Kansizoglou and Antonios Gasteratos (Democritus University of Thrace, Greece)

1:30 PM

GPU-accelerated Localization in Confined Spaces using Deep Geometric Features

Rune Y Brogaard (Technical University of Denmark & FORCE Technology, Denmark); Ole Ravn and Evangelos Boukas (Technical University of Denmark, Denmark)

1:45 PM

Landmark-based Visual SLAM using Object Detection

Anastasia Panaretou (Capra Robotics, Denmark); Phillip Mastrup (Novo Nordisk, Denmark); Evangelos Boukas (Technical University of Denmark, Denmark)

2:00 PM - 3:00 PM

Object Detection, Tracking, Characterization and Artificial Intelligence

Session Chair: Radwa Sultan (Manhattan College, USA)

2:00 PM

GeoPixAI: From Pixels to Intelligent, Unbiased and Automated Fast Track Subsurface Characterization

Shariar S Sattarin, Temoor Muther, Amirmasoud Kalantari Dahaghi and Shahin Negahban (University of Kansas, USA); Bryan Bell (Best Core Services, USA)

2:15 PM

Millimeter-Wave SAR Imaging of Composites Using Rectangular Aperture Probe

Mohammed Saif ur Rahman, Ademola Mustapha and Mohamed A Abou-Khousa (Khalifa University of Science and Technology, United Arab Emirates)

2:30

The role of machine vision in industry 4.0: An automotive manufacturing perspective

Fotios K. Konstantinidis, Ioannis Kansizoglou, Konstantinos A. Tsintotas, Spyridon G. Mouroutsos and Antonios Gasteratos (Democritus University of Thrace, Greece)

3:00 PM - 4:00 PM

Innovative Detection and Visualization Techniques

Session Chair: Alec Puran and Charles Barnes (Manhattan College)

3:00 PM

An Innovative Video Quality Assessment Method and An Impairment Video Dataset

Hang Shi (New Jersey Institute of Technology & Innovative AI Technologies, USA); Chengjun Liu (New Jersey Institute of Technology, USA)

3:15 PM

Anomalous Driving Detection for Traffic Surveillance Video Analysis

Hang Shi (New Jersey Institute of Technology & Innovative AI Technologies, USA); Hadi Ghahremannezhad and Chengjun Liu (New Jersey Institute of Technology, USA)

3:30 PM

Bone Age Assessment Based on Salient Object Segmentation

Abdalahman Alblwi, Mohammed Baksh and Kenneth Barner (University of Delaware, USA)

3:45 PM

Building an Annotated Damage Image Database to Support AI-Assisted Hurricane Impact Analysis

Hao Nan Ou (The City College of New York, USA); Sun Ho Ro and Jie Gong (Rutgers University, USA); Zhigang Zhu (The City University of New York, USA)

Thursday, August 26, 2021 – Technical Sessions

6:00 AM - 7:00 AM

Neural Networks

Session Chair: Alexandros Kerwick (Northeastern University, USA)

6:00 AM

Deep Convolutional Neural Networks for Road Crack Detection: Qualitative and Quantitative Comparisons

Jiahe Fan (Beijing Institute of Technology, China); Mohammud Junaid Bocus (University of Bristol, United Kingdom (Great Britain)); Li Wang (Hangzhou ATG Robotics, China); Rui Fan (Tongji University, China)

6:15 AM

Scale-Adaptive Pothole Detection and Tracking from 3-D Road Point Clouds

Rigen Wu (Inner Mongolia University Of Technology, China); Jiahe Fan (Beijing Institute of Technology, China); Libo Guo (IntelliVision Co. Ltd., China); Lei Qiao (Shanghai Jiao Tong University, China); Usman Bhutta (The Chinese University of Hong Kong, Hong Kong); Brett Hosking (University of Bristol, United Kingdom (Great Britain)); Sergey Vityazev (Ryazan State Radio Engineering University, Russia); Rui Fan (Tongji University, China)

6:30 AM

Detection and Sizing of Surface Cracks in Metals Using UHF Probe

Mohammed Saif ur Rahman, Ademola Mustapha and Mohamed A Abou-Khousa (Khalifa University of Science and Technology, United Arab Emirates)

6:45 AM

A Hybrid Explainable AI Framework Applied to Global and Local Facial Expression Recognition

Mohammad Mahdi Deramgozin, Slavisa Jovanovic and Hassan Rabah (University of Lorraine, France); Naeem Ramzan (University of West of Scotland, United Kingdom (Great Britain))

7:00 AM - 8:00 AM

Medical Tomographic Devices and Image Performance Enhancement

Session Chairs: Andrzej Skalski (AGH University of Science and Technology, Poland)

Manish Bajpai (IIITDM Jabalpur, India)

7:00 AM

Self-guided Genetic Algorithm for Limited View Tomography

Raghavendra Mishra (PDPM Indian Institute of Information Technology Design & Manufacturing, Jabalpur, India); Manish Bajpai (IIITDM Jabalpur, India); Avaneesh Singh (PDPM IIITDM, Jabalpur, Madhya Pradesh, India)

7:15 AM

Microwave Tomography of the Neck with ANNs: Preliminary Results with Simplified Numerical Phantoms

Chiara Dachena, Alessandro Fedeli, Matteo Pastorino and Andrea Randazzo (University of Genoa, Italy); Alessandro Fanti, Matteo Lodi and Giorgio Fumera (University of Cagliari, Italy)

7:30 AM

Left ventricular segmentation from cardiac MRI data

Michał Motak (Akademia Górniczo-Hutnicza im. Stanisława Staszica w Krakowie, Poland); Andrzej Skalski (AGH University of Science and Technology, Poland)

7:45 AM

Comparison of ASM and CNN based prostate segmentation in CT images

Artur Kos and Jaroslaw Bulat (AGH University of Science and Technology, Poland)

8:00 AM - 9:00 AM

Medical Imaging Techniques

Session Chairs: Antonios Gasteratos (Democritus University of Thrace, Greece)

8:00 AM

Extraction of Laryngeal Cancer Informative Frames from Narrow Band Endoscopic Video

Noha Ahmed Sobhi, Egypt (Saida Amna Street Sidi Gaber & Arab Academy for Science, Technology, and Maritime Transports, Egypt); Sherin Youssef (Arab Academy For Science and Technology, Egypt); Marwa Elshenawy (AAST, Egypt)

8:15 AM

Orientation Estimation in MRI of Prostate Cancer Patients: When Simple Models Perform Better

Kirill Bogomasov, Thomas Grings, Christian Rubbert, Lars Schimmoeller and Stefan Conrad (Heinrich Heine University, Germany)

8:30 AM

Automatic aortic valve area detection in echocardiography images using convolutional neural networks and U-net architecture for bicuspid aortic valve recognition

Katerina Giannakaki (Technical University of Crete, Greece); Konstantia Moirogiorgou (School of Electrical and Computer Engineering, Technical University of Crete, Greece); Michalis Zervakis (Technical University of Crete, Greece); Nikolaos Anousakis-Vlachochristou (National and Kapodistrian University of Athens & Hippokration General Hospital, Greece); George Matsopoulos (National Technical University of Athens, Greece); Christoforos Komporozos, Vasileios Sourides and Georgios Katsimagklis (Naval Hospital of Athens, Greece); Maria Drakopoulou and Konstantinos Toutouzas (National and Kapodistrian University of Athens, Greece); Catherine Avgeropoulou and Aristeidis Androulakis (Hippokration General Hospital, Greece)

8:45 AM

ComBat harmonization for multicenter MRI based radiomics features

Elisavet Stamoulou (FORTH-Hellas, USA); Georgios C. Manikis (Foundation for Research and Technology, Greece); Manolis Tsiknakis (Hellenic Mediterranean University, Greece & FORTH -ICS, Greece); Kostas Marias (FORTH, Greece)

9:00 AM - 10:00 AM

Potable Medical Devices and Advanced Processing Techniques

Session Chair: Dimitris K Iakovidis (University of Thessaly, Greece)

9:00 AM

Accelerating FPGA-Implementations for Mobile Medical Devices with high-level AI libraries: an Object Detection Model for Colorectal Polyp Images

Sunyoung Yoo (Korea (South)); Yunlong Wang (University of Southern Denmark, Denmark); Jan-Matthias Braun (The Maersk Mc-Kinney Moller Institute University of Southern Denmark, Denmark); Esmail S Nadimi (University of Southern Denmark, Denmark)

9:15 AM

Significant Smartphone Images Features For Liver Steatosis Assessment

Khadidja Ould Amer (EuroMov Digital Health in Motion, IMT Mines Ales, France); Baptiste Magnier (EuroMov Digital Health in Motion, Univ Montpellier, IMT Mines Ales, Ales, France); Stefan Janaqi (EuroMov Digital Health in Motion, IMT Mines Ales, France); Manuela Cesaretti and Clément Labiche (Stella Surgical, France)

9:30 AM

Explainable Fuzzy Texture Words Model for Automatic Bone Fracture Identification

Georgia Sovatzidi, Panagiota Gatoula, Michael Vasilakakis and Dimitris K Iakovidis (University of Thessaly, Greece)

9:45 AM

Bone Marrow Cell Recognition: Training Deep Object Detection with A New Loss Function

Huang Dehao and Jintao Cheng (South China Normal University, China); Rui Fan (Tongji University, China); Zhihao Su and Ma QiongXiong (South China Normal University, China); Jie Li (Nanfeng Hospital, Southern Medical University, China)

10:00 AM - 11:00 AM

Advanced Health Engineering Solutions

Session Chair: Matteo Pastorino (University of Genoa, Italy)

10:00 AM

Self-Supervised Soft Obstacle Detection for Safe Navigation of Visually Impaired People

George Dimas, Eirini Cholopoulou and Dimitris K Iakovidis (University of Thessaly, Greece)

10:15 AM

Resilient Healthcare Communications using Delay Tolerant Proxy Services

Emmanouil G. Spanakis (Foundation for Research and Technology - Hellas, Institute of Computer Science, Greece); Vangelis Sakkalis (Foundation for Research and Technology (FORTH), Greece)

10:30 AM

Web acquired image datasets need curation: an exemplar pipeline evaluated on Greek food images

Vasileios Sevetlidis, George Pavlidis and Vasileios Arampatzakis (ATHENA Research Center, Greece); Chairi Kiourt (ATHENA Research Center, Greece); Spyridon G. Mouroutsos and Antonios Gasteratos (Democritus University of Thrace, Greece)

10:45 AM

Effect of Data Noise on LSTM-FC Scattered-Field Processing for Microwave Imaging

Alessandro Fedeli, Matteo Pastorino and Andrea Randazzo (University of Genoa, Italy)

11:00 AM - 12:00 PM

Granular Computing

Session Chair: Shusaku Tsumoto (Shimane University, Japan)

11:00 AM

Comparison of Clustering Strategies using a Partition Tree

Shusaku Tsumoto, Shoji Hirano and Tomohiro Kimura (Shimane University, Japan)

11:15 AM

Fuzzy Adaptive Focal Loss for Imbalanced Datasets

Tzung-Pei Hong (National University of Kaohsiung, Taiwan); Wei-Chun Peng (National Sun Yat-Sen University, Taiwan); Ja-Hwung Su and Shyue-Liang Wang (National University of Kaohsiung, Taiwan)

11:30 AM

Reconstruction of Chaotic Grayscale Image Encryption Based on Deep Learning

Xing Bai, JinXi Li, Zhan Yu, ZhongZhuo Yang, YuJie Wang, XingYu Chen and Xin Zhou (Sichuan University, China)

11:45 AM

Automatic Synthesis of Computer Vision Workflow using AI Planning

Vartika Sengar (TCS Research, India); Jayavardhana Gubbi (TCS Research, India & University of Melbourne, Australia); Asha Rajbhoj (TCS Research, India); P. Balamuralidhar (Tata Consultancy Services, India)

12:00 PM - 1:00 PM

Image Processing and Artificial Intelligence

Session Chair: Rui Fan (Tongji University, China)

12:00 PM

Study on different Skin lesion Segmentation techniques and their comparisons

Kapil Gangwar (University of Alberta, Canada)

12:15 PM

Deep-Learning based Scatter Correction in Digital Radiography

Nikolaos Sakaltras, Carlos Fernandez Del Cerro, Manuel Desco Menendez and Monica Abella Garcia (University Carlos III Madrid, Spain)

12:30 PM

Ear Recognition using Chainlet based Multi-Band SVM

Matthew Zarachoff, Akbar Sheikh-Akbari and Dorothy Monekosso (Leeds Beckett University, United Kingdom (Great Britain))

12:45 PM

Numerical Simulation of Thermoelectric Based Temperature Control system for CubeSat in Space

Peifeng Yu, Chengui Zhang, Zezhan Zhang, Yang Yang, Yi Niu, Jing Jiang and Chao Wang (University of Electronic Science and Technology of China, China)

1:00 PM - 2:30 PM

Imaging Measurements, Characterization, and Processing

Session Chair: Wafa Elmannai (Manhattan College, USA)

1:00 PM

Leaf Segmentation in Outdoor Environment Using A Low-cost Infrared Camera

Aryunto Soetedjo (National Institute of Technology (ITN) Malang, Indonesia); Evy Hendrianti (National Institute of Technology (ITN) Malang, Indonesia)

1:15 PM

Multispectral-band radiation thermometry method based on double-stage emissivity neural network

Zezhan Zhang, Yi Niu and Peifeng Yu (University of Electronic Science and Technology of China, China); Shan Gao (Harbin Engineering University, China); Jing Jiang and Chao Wang (University of Electronic Science and Technology of China, China)

1:30 PM

MicroPoreNet: Complex and Multilevels Microporosity Characterization of Carbonate Rocks through Semisupervised CNN

Shariar S Sattarin, Temoor Muther, Amirmasoud Kalantari Dahaghi and Shahin Negahban (University of Kansas, USA)

1:45 PM

Perception-Driven Ballet Gesture Recognition and Evaluation System Using Kinect

Apirath Limmanee (King Mongkut's Institute of Technology Ladkrabang, Thailand)

2:00 PM

A Novel Effective Framework for Medical Images Secure Storage Using Advanced Cipher Text Algorithm in Cloud Computing

Dimitrios A. Karras (NKUA, National and Kapodistrian University of Athens, Greece)

2:15 PM

Image Forgery and Deepfake: Identify the Manipulation of Images using CRFFN

Anant Sah, Sharath Thomas, Vineet Singh, Animesh Sharma and Murali Keshav (Vellore Institute of Technology, India); Surya Prakash (IIIT Allahabad, India)

2:30 PM - 3:00 PM

Closing Ceremony