Joint TC1 - TC2 International Symposium
on Photonics and Education in Measurement Science
in collaboration with the Conference on Optical Fibre & Photonic Sensors for Industrial & Safety Applications (OFSIS)
17.09.-19.09.2019, Jena, Germany

IMEKO
TC1 – TC2 Jena 2019

Day 1 – 17.09.2019

09:00-09:30   Registration

Technologie- und Innovationspark Jena GmbH, Hans-Knöll-Straße 6, 07745 Jena, Germany

09:30-10:00   Welcome Address from the Organizers

(Dr. Maik Rosenberger, Prof. Dr. Bernhard Zagar, Paul-Gerald Dittrich)

10:00-11:30   Session 1 - 6 Presentations 12 min + 3 min Q&A

Time	Nr.	Topic; Speaker
10:00-10:15	01	Multimodal sensor: high-speed 3D and thermal measurement; Martin Landmann
10:15-10:30	02	Smart multispectral image acquisition and multi-channel image processing with programmable system on chip devices; Mathias Schellhorn
10:30-10:45	03	Sensitivity-enhanced fiber interferometric high temperature sensor based on Vernier effect; Xueqin Lei
10:45-11:00	04	Laboratory exercise of digital measurement system based on Modbus protocol used for indoor environment monitoring; Jan Holub
11:00-11:15	05	Measurement accuracy and dependence on external influences of the iPhone X TrueDepth sensor; Andreas Breitbarth
11:15-11:30	06	Supercontinuum white light lasers: a review on technology and applications; Nicolai Granzow

11:30-13:15   Lunch (in parallel Industrial Exhibition)

13:15-14:00   Keynote 1

5D Imaging: Multispectral and multimodal 3D sensor technologies;

Prof. Dr. Gunther Notni; 35 min + 10 min Q&A

14:00-15:30   Session 2 - 6 Presentations 12 min + 3 min Q&A

Time	Nr.	Topic; Speaker
14:00-14:15	07	Quantification and classification in process analytics using hyperspectral imaging; Gabriel Varga
14:15-14:30	08	Principle investigations on polarization image sensors; David Rebhan
14:30-14:45	09	SnapshotNIR: a handheld multispectral imaging system for tissue viability assessment; Michael Sowa
14:45-15:00	10	Remote-audit and VR support in precision and mechanical engineering; Philipp Greiner
15:00-15:15	11	Modelling and calibration of multi-camera-systems for 3D industrial supervision applications; Guido Straube
15:15-15:30	12	How to support interest in engineering in secondary education; Jan Fischer

15:30-16:00   Coffee Break (in parallel Industrial Exhibition)

16:00-17:30   Session 3 - 6 Presentations 12 min + 3 min Q&A

Time	Nr.	Topic; Speaker
16:00-16:15	13	Three-dimensional THT solder joint reconstruction for inline inspection systems; Johannes Richter
16:15-16:30	14	Scattering light in bearing production: roundness, waviness, roughness in one operation; Stephan Sommer
16:30-16:45	15	Inline thickness measurement with imaging ellipsometry; Ferdinand Bammer
16:45-17:00	16	A high sensitivity fiber Bragg grating seismic sensor system for intrusion detection; Zhihui Sun
17:00-17:15	17	Physically based synthetic image generation for machine learning: a review of pertinent literature; Dominik Schraml
17:15-17:30	18	F0-Lab: the simple tool for laboratory experiments in measurement and instrumentation; Jan Fischer

17:30-18:30   Poster session 1 & Guided Industrial Exhibition
--> Transfer to the Evening Event

19:30-22:00   Evening Event - Zeiss-Planetarium
--> Get Together with Snacks & Drinks (Link: www.planetarium-jena.de)

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Day 2 – 18.09.2019

09:00-09:30   Registration

09:30-11:30   Scientific Tour
Fraunhofer Institute for Applied Optics and Precision Engineering IOF
Albert-Einstein-Str. 7, 07745 Jena

Link: www.iof.fraunhofer.de

11:30-13:15   Lunch (in parallel Industrial Exhibition)

13:15-14:00   Keynote 2

Photonics meets Image Processing: EMVA's standards 1288 for camera characterization and the new Open Optics Camera Interface Standard OOCI;

Prof. Dr. Bernd Jähne; 35 min + 10 min Q&A

14:00-15:30   Session 4 - 6 Presentations 12 min + 3 min Q&A

Time	Nr.	Topic; Speaker
14:00-14:15	19	Scene based camera pose estimation in Manhattan worlds; Darko Vehar
14:15-14:30	20	Feature detection in unorganized pointclouds; Marc Preissler
14:30-14:45	21	Magnetic-fluid-based photonic crystal fiber for temperature sensing; Weihong Bi/Wa Jin
14:45-15:00	22	Simulation-based investigation on optical 3D surface measurement with composite spectral patterns; Chen Zhang
15:00-15:15	23	Spectral near field data of LED systems for optical simulations; Ingo Rotscholl
15:15-15:30	24	Implementation of a multiview passive-stereo-imaging system with SoC technology; Richard Fütterer

15:30-16:00   Coffee Break (in parallel Industrial Exhibition)

16:00-17:30   Session 5 - 6 Presentations 12 min + 3 min Q&A

Time	Nr.	Topic; Speaker
16:00-16:15	25	Comparison of the performance of innovative deep learning and classical methods of machine learning to solve industrial recognition tasks; Katharina Anding
16:15-16:30	26	Measurement principle for the determination of spectral channel-specific angle dependencies for multispectral resolving filter-on-chip sensors; Paul-Gerald Dittrich
16:30-16:45	27	Automatic crack detection on concrete floor images; Christophe Simler
16:45-17:00	28	Characterization of optical spectrum in laser beam welding of dissimilar aluminum-copper joints and time-dependent correlation to process stages; Marc Seibold
17:00-17:15	29	System calibration and characterization of an ultra-compact multispectral snapshot imaging system; Martin Hubold
17:15-17:30	30	HMI - human machine interface for industrial quality inspection tasks; Jürgen Geffe/David Buchanon

17:30-18:30   Poster session 2 & Guided Industrial Exhibition

--> Transfer to the Evening Event

19:30-22:00   Evening Event – Thuringia Barbecue

--> Get Together with Snacks & Drinks (Link: www.zurnoll.de)

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Day 3 – 19.09.2019

09:30-10:00   Registration

10:00-11:30   Session 6 - 6 Presentations 12 min + 3 min Q&A

Time	Nr.	Topic; Speaker
10:00-10:15	31	A fiber optic ultrasonic sensing system for 2D temperature field monitoring using optically generated acoustic waves; Xingwei Wang
10:15-10:30	32	Optical analysis of magnetic microstructures; Ruben Piepgras
10:30-10:45	33	Data fusion of multi-spectral cameras on a low-power processing platform for self-sufficient outdoor operation; Andreas Reichel
10:45-11:00	34	A development overview of a signal flow model for spectral data with a final assessment under a practical point of view; Raik Illmann
11:00-11:15	35	Introducing uncertainty of complex-valued quantities in measurement science education; Dailys Arronde Perez
11:15-11:30	36	GigEVision-compliant communication handling in embedded multi-camera image acquisition systems for quality inspection; Karsten Pahnke/Frank Senf

11:30-13:15   Lunch (in parallel Industrial Exhibition)

13:15-14:45   Session 7 - 4 Presentations 12 min + 3 min Q&A

Time	Nr.	Topic; Speaker
13:15-13:30	37	Application of DOE in confocal microscopy for surface measurement; Zheng Li
13:30-13:45	38	Advanced light field imaging for quality inspection; Christoph Garbe
13:45-14:00	39	Challenges and chances using imaging systems for skin and hair in dermatology and aesthetics; Tobias Stenz
14:00-14:15	40	Funding of Research and Innovation – Information for SME; Jörg Steffenhagen
14:15-14:30	41	Joint TC1 and TC2 Committee Meeting
14:30-14:45	42	Collaborative thinking about photonics and education in measurement science

14:45-15:30   Closing Ceremony

Poster Presentations & Supporter

Poster

Nr.	Presenter	Topic
01	Vladimir Haasz	Preparatory course "Practical electronics" focused on measurement and instrumentation
02	Yan Zhang	Efficient 3D object tracking approach based on convolutional neural network and Monte Carlo algorithms used for a pick and place robot
03	Tomas Drabek	The new subject at the Czech Technical University in Prague: laboratories of industrial electronics and sensors
04	Christina Junger	FPGA-based lens undistortion and image rectification for stereo vision applications
05	Zhaowei Wang	Highly sensitive carbon monoxide sensor for early forecasting of coal spontaneous combustion
06	Zhen Li	Response time analysis of hot-wire-based gas velocity sensor using optical fiber
07	Harald Piepereit	Spectrum detection of multichannel miniature spectrometer on matrix-sensor
08	Tobias Scholz	Portability of the fragmented l1-norm transform for massively parallel processing
09	Christian Negara	Simplified Stokes polarimeter based on division-of-amplitude
10	Rolf Hoffmann	Production of a favorable calibration target for the determination of distortions of lenses in image processing
11	Philipp Greiner	Requirements for web-based integrated management systems in the production of image processing components
12	Sascha Lummitsch	The perspective of optical measurement methods in forestry

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Supporter

Nr.	Logo	Information
01	VISION & CONTROL	Vision & Control GmbH https://www.vision-control.com
02	NKT Photonics	NKT Photonics GmbH https://www.nktphotonics.com
03	emsys	emsys Embedded Systems GmbH https://www.emsys.de
04	Steinbeis Qualitätssicherung und Bildverarbeitung GmbH	Steinbeis Qualitätssicherung und Bildverarbeitung GmbH (SQB GmbH) https://quick-image.de
05	TechnoTeam Bildverarbeitung GmbH	TechnoTeam Bildverarbeitung GmbH https://www.technoteam.de
06	Quantum Design EUROPE	Quantum Design GmbH https://lot-qd.de
07	QUALIMESS Next Generation	QUALIMESS - Next Generation https://www.tu-ilmenau.de/qualimess/forschungsprofil
08	Fraunhofer IOF	Fraunhofer Institute for Applied Optics and Precision Engineering IOF https://www.iof.fraunhofer.de
09	gbs	Gesellschaft für Bild- und Signalverarbeitung (GBS) mbH http://gbs-ilmenau.de
10	ICC spectronet	SpectroNet - International Collaboration Cluster https://www.spectronet.de

The Joint TC1 - TC2 International Symposium on Photonics and Education in Measurement Science 2019 addresses recent research and developments in photonic instrumentation and applications as well as education and training in measurement sciences. The format of the conference will be single-track with both oral lectures and posters as well as scientific tours and exhibition of instruments and systems.

Scientific Keynotes and Lectures about New Technologies, Methods and Applications

Scientific Tours and Exhibition of Instruments and Solutions for Photonic Measurement Sciences

High-level Contacts for Scientific Exchange and Project-based Cooperation in Research & Development

Pre-Planned Matchmaking Event for Scientists and Engineers as well as Digital Documentation

www.imeko-jena.com

Scientific and Industrial Related Topics:

- Education & Training in Measurement & Instrumentation
- Applied Photonics for Science & Engineering in Industry, Biology, Medicine & Environment
- Sensor & System Characterization in Photonics & Machine Vision
- Photonics & Machine Vision Sensors and Systems for Multimodal Sensing
- Photonics & Machine Vision in UV, VIS/NIR, SWIR Wavelength Range including also LWIR & THz
- Software & Processing of Multivariate & Multidimensional Data as well as Deep Learning
- Development of Models, Methods & Algorithms in Photonics and Machine Vision

Scientific Committees:

TC1 – Education & Training in Measurement and Instrumentation
TC2 – Photonics
OFSIS – Optical Fibre and Photonic Sensors for Industrial and Safety Applications