



# ELFI 2019 Workshop

04–06 June, 2019 / Borovets, Bulgaria

## Tuesday, 04 June, 2019

08:00–08:10	Opening
08:10–09:00	Keynote: <b>Optical Compressive Multidimensional Sensing</b> <i>Adrian Stern</i> Ben-Gurion University, Israel
09:00–10:00	Lecture session 1: Light field sensing  <b>Light Field Sensing and Content Creation</b> <i>Reinhard Koch</i> Multimedia Information Processing group, Christian-Albrechts Universität Kiel, Germany  <b>Near Real-time Light Field Reconstruction and Rendering for On-set Capture Quality Evaluation</b> <i>Matthias Ziegler<sup>1</sup>, Mojtaba Bermana<sup>2</sup>, Joachim Keinert<sup>1</sup>, Karol Myszkowski<sup>2</sup></i> <sup>1</sup> Fraunhofer Institute for Integrated Circuits, Moving Picture Technologies, Erlangen, Germany; <sup>2</sup> Max Planck Institute for Informatics, Computer Graphics, Saarbrücken, Germany  <b>Creation of 360° Light Fields Using Concentric Mosaics with Varying Slit Widths</b> <i>Sebastian Knorr, Matthias Knoblauch, Thomas Sikora</i> Communication Systems Group, Technical University of Berlin, Germany
10:00–10:30	Coffee break
10:30–11:20	Keynote: <b>Radon Transform for Practical Light Field Imaging</b> <i>Todor Georgiev</i> Adobe, USA
11:20–12:20	Lecture session 2: Light field processing  <b>Light Field Sampling and Reconstruction</b> <i>Atanas Gotchev</i> 3D Media Group, Tampere University, Finland  <b>Interactive Light Field Tilt-Shift Refocus with Generalized Shift-and-Sum</b> <i>Martin Alain, Weston Aenchbacher, Aljosa Smolic</i> V-SENSE Project, Trinity College, Dublin, Ireland  <b>A Novel Depth Adaptive Tone Mapping Scheme for Multi-View 3D HDR Content Generation</b> <i>Mansi Sharma<sup>1</sup>, M. S. Venkatesh<sup>2</sup>, Rohan Lal<sup>1</sup></i> Indian Institute of Technology Madras <sup>1</sup> , Delhi <sup>2</sup> , India
12:20–13:20	Lunch break
13:20–14:20	Lecture session 3: Light field display  <b>Towards end-to-end solutions for capturing, authoring and displaying wide light-field content</b> <i>Tibor Balogh</i> Holografika, Hungary  <b>Some Practical Aspects of Light Field Display Systems</b> <i>Philip Surman</i> Nanyang Technological University, Singapore  <b>Design and characterization of light field displays based on retinal image formation models</b> <i>Erdem Sahin</i> 3D Media Group, Tampere University, Finland

14:20–14:50	Coffee break
14:50–16:00	<p>Poster session 1</p> <p><b>Preserving Scene Fidelity by Computer Vision and Geometrical Optics Based on Raw Captures</b>  <i>Yongwei Li</i>  Realistic 3D Group, Mid Sweden University, Sweden</p> <p><b>FiMic: Fourier Plane Integral Microscope, a Light-Field Microscope and Its Applications</b>  <i>Gabriele Scrofani</i>  University of Valencia, Spain</p> <p><b>Temporal Resolution of the Human Visual System and Light Field Displays</b>  <i>Maydel Fernandez-Alonso</i>  Newcastle University, UK</p> <p><b>Opportunities and Challenges for Light Field Compression with Video Coding Tools</b>  <i>Waqas Ahmad</i>  Realistic 3D Group, Mid Sweden University, Sweden</p> <p><b>Tone Mapping on HoloVizio projector images</b>  <i>Oleksii Doronin</i>  Holografika, Hungary</p> <p><b>Plenoptic Image Watermarking: A Robust Approach</b>  <i>Amir Ansari</i>  University of Valencia, Spain</p> <p><b>Rectification Algorithm of Curvilinear Epipolar Geometry for Scene Depth Retrieval in Plenoptic Imaging Systems</b>  <i>Mehdi Ardebili</i>  Raytrix, Germany</p> <p><b>Light-Field 3D Videoconferencing</b>  <i>Aron Cserkaszy</i>  Holografika, Hungary</p> <p><b>Batch ST: Batch Shearlet Transform for Light Field Reconstruction</b>  <i>Yuan Gao</i>  Christian-Albrechts-Universität Kiel, Germany</p> <p><b>Full 3D Reconstruction using Multi-Focus Plenoptic Cameras</b>  <i>Luca Palmieri</i>  Christian-Albrechts-Universität Kiel, Hungary</p> <p><b>Lightfield Editing for Cinema Quality Media Production</b>  <i>Faezeh S. Zakeri</i>  Moving Picture Technologies, Fraunhofer IIS, Germany</p> <p><b>Spatial contrast sensitivity at high luminance: data and modeling</b>  <i>Christos Kaspiris-Rouselli, Adam Simmons and Jenny C. A. Read</i>  Institute of Neuroscience, Newcastle University, UK</p> <p><b>CIVIT Dataset: Horizontal-Parallax-Only Densely-Sampled Light-Fields</b>  <i>Sergio Moreschini</i>  3D Media Group, Tampere University, Finland</p> <p><b>CIVIT Dataset: Stereoscopic 3D-360 videos of typical media production use cases</b>  <i>Filipe Gama</i>  3D Media Group, Tampere University, Finland</p>
19:00–21:00	Dinner
21:00–22:00	Welcome drinks

14:00–15:00	Lunch break
15:00–16:20	<p>Lecture session 4: Light field compression</p> <p><b>Light Field Modelling and Compression, and Augmented Telepresence for Remote Operation</b> <i>Mårten Sjöström</i> Realistic 3D Group, Mid Sweden University, Sweden</p> <p><b>Camera Array Depth Estimation for Views in Generic Positions</b> <i>Emre Can KAYA, Ioan TABUS</i> Tampere University, Finland</p> <p><b>3D Point Cloud Geometry Compression using TSPLVQ</b> <i>Amira Filali, Vincent Ricordel, Nicolas Normand</i> LS2N Laboratory, Nantes University, France</p> <p><b>Rate-complexity trade-off in Minimum Rate Predictors Light Field lossless encoding</b> <i>João M. Santos, Pedro A. A. Assuncao, Luis A. da Silva Cruz, Luis M. N. Tavora, Rui Fonseca-Pinto, Sergio M. M. Faria</i> Instituto de Telecomunicacoes; ESTG - Instituto Politecnico de Leiria, Leiria, Portugal</p>
16:20–16:50	Coffee break
16:50–17:50	<p>Poster session 2</p> <p><b>Multi-User Augmented Reality Application for Video Communication in Virtual Space</b> <i>Kumar Mridul, M. Ramanathan, Kunal Ahirwar, Mansi Sharma</i> Indian Institute of Technology, Madras, India</p> <p><b>Visually Lossless Compression of Light Fields</b> <i>Lucas A. Thomaz et al.</i> Instituto de Telecomunicacoes, Portugal</p> <p><b>Photogrammetric Multiple Camera Calibration Using a Robotic Arm</b> <i>Laura Ribeiro, Atanas Gotchev</i> 3D Media Group, Tampere University, Finland</p> <p><b>The Mechanisms for Depth Perception from Light Fields: A Review</b> <i>Yuta Miyanishi</i> 3D Media Group, Tampere University, Finland</p> <p><b>Characterization of Accommodation Response in Foveated Near-Eye Holographic Displays</b> <i>Jani Mäkinen, Erdem Sahin, Atanas Gotchev</i> 3D Media Group, Tampere University, Finland</p> <p><b>A Forest Landscape for Visual SLAM</b> <i>Ihtisham Ali</i> 3D Media Group, Tampere University, Finland</p> <p><b>Surface light field coding for dynamic 3D point clouds</b> <i>Deepa Naik, Sebastian Schwarz</i> Nokia Technologies, Finland</p> <p><b>Using Epipolar Plane Image Representations for Objective Evaluation of Light Field Images</b> <i>Ali Ak, Patrick Le Callet</i> University of Nantes, France</p> <p><b>Multiframe kernel based view interpolation for light field video</b> <i>Dingcheng Yue</i> University of Cambridge, UK</p> <p><b>Light Field Datasets for Visual Quality Assessment and New Challenges: An Overview</b></p>

*Waqas Ellahi, Toïnon Vigier, Patrick Le Callet*  
University of Nantes, France

**A Novel Convex Autoregressive Model for Light Field Denoising on Riemannian Space**

*Mansi Sharma, Rohan Lal*  
Indian Institute of Technology, Madras, India

**Edge Reconstruction Method to Improve Depth Estimation from Light Fields**

*Rui Lourenco, Pedro A. A. Assuncao, Luis M. N. Tavora, Lucas A. Thomaz, Rui Fonseca-Pinto, Sergio M. M. Faria*  
Instituto de Telecomunicacoes; ESTG - Instituto Politecnico de Leiria, Leiria, Portugal

19:30–21:30 | Dinner

## Thursday, 06 June, 2019

08:00–09:20 | Lecture session 5: Optics and Vision

**The human visual system and novel displays**

*Jenny Read*  
Institute of Neuroscience, Newcastle University, UK

**Lightfield microscopy. From capture to display.**

*Manuel Martinez Coral*  
3D Imaging and Display Laboratory, University of Valencia, Spain

**A Software Framework for RGB-D Image Formation Using Focused Plenoptic Cameras**

*Arne Petersen, Reinhard Koch*  
Multimedia Information Processing group, Christian-Albrechts-Universität Kiel, Germany

**Virtually Transparent Dynamic Obstacles in Heavy Mobile Work Machines**

*Olli Suominen*  
3D Media Group, Tampere University, Finland

09:20–10:00 | Interactive session