# 2019 International Conference on 3D Immersion (IC3D 2019)

**Brussels, Belgium**
**11 December 2019**

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stereopsia

# 2019 International Conference on 3D Immersion (IC3D 2019)
## Final program

**Technically co-sponsored by the IEEE Signal Processing Society**
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Each presentation duration (e.g. 18 min) include the time for optional Q&A and
a 1 min transition to next speaker or break.
Speakers are underlined.

The organizers reserve the right to make changes to this program at any time.

All sessions are at SQUARE in Room 311.
All breaks are at SQUARE.

## Wedesday, 11 December 2019  –  IC3D

At SQUARE

**AM**

08:00 - 18:00  **Welcome and registration** (at SQUARE)

09:00 - 09:02  (02 min)  **Session I-0** (at SQUARE, Room 311)

- (02 min)  Welcome address, and overview of Stereopsia, XR4ALL, IC3D, and the day's program,
  Jacques G. Verly (University of  Liège, Belgium)

09:02 - 10:32  (90 min)  **Session I-1** (at SQUARE, Room 311)

- Chairs:  Pouyan Ebrahimbabaie (University of Liège, Belgium),
      Jacques G. Verly (University of Liège, Belgium)

- (18 min)  A novel algebraic variety based model for high quality free-viewpoint view synthesis on a Krylov subspace,
  Mansi Sharma, Gowtham Ragavan (Indian Institute of Technology Madras, India), Arathi B (National Institute of Technology Tiruchirappalli, India).....1
- (18 min)  Objective and subjective assessment of binocular disparity for projection-based light field displays,

Péter A. Kara (Kingston University, UK; Holografika, Hungary; Budapest University of Technology and Economics, Hungary), Roopak R. Tamboli (Holografika, Hungary; Indian Institute of Technology Hyderabad, India), Aron Cserkaszky, Attila Barsi (Holografika, Hungary), Aniko Simon (Sigma Technology, Hungary), Agnes Kusz (University of Bonn, Germany), Laszlo Bokor (Budapest University of Technology and Economics, Hungary), Maria G. Martini (Kingston University, UK).....9

- (18 min)  A 3D convolutional neural network for light field depth estimation,
Ágota Faluvégi, Quentin Bolsée, Sergiu Nedevschi, Vasile-Teodor Dădârlat, Adrian Munteanu (Vrije Universiteit Brussel, Belgium; Technical University of Cluj-Napoca, Romania).....17
- (18 min)  Local-convexity reinforcement for scene reconstruction from sparse point clouds,
Maxime Lhuillier (Université Clermont Auvergne, France).....22
- (18 min)  Relating eye dominance to human brain chemistry using ultra high field 7-Tesla MR spectroscopy,
I. Betina Ip (University of Oxford, UK), Claudia Lunghi (École Normale Supérieure, Paris, France), Uzay E. Emir (Purdue University, USA), Andrew J. Parker (University of Oxford, UK), Holly Bridge (University of Oxford, UK).....30

10:30 - 11:00   (30 min)  **Coffee break** (at SQUARE)

11:00 - 12:30   (90 min)  **Session I-2** (at SQUARE, Room 311)

- Chairs:  Anaïs Halin (University of Liège, Belgium),
        Jacques G. Verly (University of Liège, Belgium)

- (18 min)  Cybersickness and evaluation of a remediation system: A Pilot Study,
Lucile André, Rozenn Coutellier (Naval Group Research, France).....37
- (18 min)  Annotation-based development of explorable immersive VR/AR environments,
Jakub Flotyński, Adrian Nowak (Poznań University of Economics and Business, Poland).....43
- (18 min)  Assessing spatial and temporal reliability of the Vive system as a tool for naturalistic behavioural research,
G. Verdelet, C. Desoche, F. Volland, A. Farnè, A. Coudert, R. Hermann, E. Truy, V. Gaveau, F. Pavani, R. Salemme (Lyon Neuroscience Research Center, France; University of Lyon, France) – for detailed affiliations, see paper.....52
- (18 min)  A novel image fusion scheme for FTV view synthesis based on layered depth scene representation & scale periodic transform,
Mansi Sharma, Gowtham Ragavan (Indian Institute of Technology Madras, India).....60
- (18 min)  Consistent long sequences Deep Faces,
Xudong Fan (Université Libre de Bruxelles, Belgium; Beihang University, China), Daniele Bonatto, Gauthier Lafruit (Université Libre de Bruxelles, Belgium).....68

**NOON**

12:30 - 13:45   (75 min)  **Lunch break** (at SQUARE)

**PM**

13:45 – 15:33 (108 min)  **Session I-3** (at SQUARE, Room 311)

- Chairs:  Pouyan Ebrahimbabaie (University of Liège, Belgium),
  Jacques G. Verly (University of Liège, Belgium)

- (18 min)  A novel approach for multi-view 3D HDR content generation via depth adaptive cross trilateral tone mapping,
  Mansi Sharma (Indian Institute of Technology Madras, India), M.S. Venkatesh (Indian Institute of Technology Delhi, India), Gowtham Ragavan (Indian Institute of Technology Madras, India), Rohan Lal (Indian Institute of Technology Madras, India).....76
- (18 min)  A process for the semi-automated generation of life-sized, interactive 3D character models for holographic projection,
  Xinyu Huang, John Twycross, Fridolin Wild (Oxford Brookes University, UK).....84
- (18 min)  The Semantic Web3D: towards comprehensive representation of 3D content on the semantic web,
  Donald P. Brutzman (Naval Postgraduate School, USA), Jakub Flotyński (Poznań University of Economics and Business, Poland), Athanasios G. Malanos (Hellenic Mediterranean University, Greece), Nicholas F. Polys (Virginia Tech, USA), Leslie F. Sikos (Edith Cowan University, Australia).....92
- (18 min)  A hybrid approach to wide baseline view synthesis with convolutional neural networks,
  Nour Hobloss (Télécom-Paris, France; B<>COM, France), Andrei Purica, Attilio Fiandrotti, Marco Cagnazzo (Télécom-Paris, France), Remi Cozot (University of the Littoral Opal Coast, France), Wassim Hamidouche (B<>COM, France; University of Rennes, France).....101
- (18 min)  A rich stereoscopic 3D high dynamic range image & video database of natural scenes,
  Aditya Wadaskar, Mansi Sharma, Rohan Lal (Indian Institute of Technology Madras, India).....108
- (18 min)  Predicting forward & backward facial depth maps from a single RGB image for mobile 3D AR application,
  Avinash Panneerselvam, Mansi Sharma (Indian Institute of Technology Madras, India).....116

15:33 - 16:00  (27 min)  **Coffee break** (at SQUARE)

16:00 - 17:30  (90 min)  **Session I-4** (at SQUARE, Room 311)

- Chairs:  Anaïs Halin (University of Liège, Belgium),
  Jacques G. Verly (University of Liège, Belgium)

- (18 min)  Analysis of intended viewing area vs estimated saliency on narrative plot structures in VR film,
  Colm O Fearghail (Trinity College Dublin, Ireland), Sebastian Knorr (Trinity College Dublin, Ireland; Technical University of Berlin, Germany), Aljosa Smolic (Trinity College Dublin, Ireland).....124
- (18 min)  Frame-wise CNN-based view synthesis for light field camera arrays,
  Ionut Schiopu (Vrije Universiteit Brussel, Belgium), Patrice Rondao Alface (Nokia Bell Labs, Belgium), Adrian Munteanu (Vrije Universiteit Brussel, Belgium).....132
- (18 min)  Region dependent mesh refinement for volumetric video workflows,
  Rodrigo Diaz, Aurela Shehu, Ingo Feldmann, Oliver Schreer, Peter Eisert (Fraunhofer Institute for Telecommunications, Heinrich Hertz Institute, Germany).....139

- (18 min) A novel randomize hierarchical extension of MV-HEVC for improved light field compression,
Mansi Sharma, <u>Gowtham Ragavan</u> (Indian Institute of Technology Madras, India).....147
- (18 min) MPEG-I depth estimation reference software,
Ségolène Rogge (Vrije Universiteit Brussel, Belgium), <u>Daniele Bonatto</u> (Université Libre de Bruxelles, Belgium; Vrije Universiteit Brussel, Belgium), Jaime Sancho, Rubén Salvador, Eduardo Juarez (Universidad Politecnica de Madrid, Spain), Adrian Munteanu (Vrije Universiteit Brussel, Belgium), Gauthier Lafruit (Université Libre de Bruxelles, Belgium).....155

17:30 - 17:32  (02 min)  **Session I-5** (at SQUARE, Room 311)

- (02 min) Closing and farewell,
<u>Jacques G. Verly</u> (University of Liège, Belgium)

17:32          **End of IC3D**

Thank you for your participation!

**Evening** (open to all IC3D attendees)

17:30 - 20:30  **XR meetup**, with **Networking drink** (at SQUARE, Exhibition area)



Thank you for your participation!