

## Program at a glance (IEEE AIVR 2018)

December 10 (Monday)			
Place Time	Grand Ballroom 1 (13F)	Grand Ballroom 2 (13F)	Plum Blossom (13F)
07:30-17:00	Registration		
08:30-08:40	<b>Opening Ceremony</b> Dr. Jeffrey J. P. Tsai, President, Asia University, Taiwan		
08:40-09:30	<b>Keynote I</b> Dr. Sheng-Wei Chen Session Chair: Dr. Jeffrey J. P. Tsai		
09:30-9:50	Coffee Break		
09:50-10:40	<b>Keynote II</b> Dr. Vladlen Koltun Session Chair: Dr. Jean-Claude Latombe		
10:40-10:45	Intermission		
10:45-11:35	<b>AIVR (1)</b> Session Chair: Dr. Rob Haelterman		
11:35-11:40	Intermission		
11:40-12:40	<b>AIVR (2)</b> Session Chair: Dr. Simon M. Hofmann		
12:40-13:40			Lunch
13:40-16:00	<b>DAIVAR (1)</b> Session Chair: Dr. Kening Zhu		
16:00-16:20	Coffee Break		
16:20-17:10	<b>DAIVAR (2)</b> Session Chair: Dr. Kening Zhu		
17:10-18:30	Break		
18:30-21:00	<b>Short Talks</b> Session Chairs: Dr. Wolfgang Huerst Dr. Jianquan Liu <b>Reception</b> <b>Olympus Room I (11F)</b>		
December 11 (Tuesday)			
Place Time	Grand Ballroom 1 (13F)	Grand Ballroom 2 (13F)	Plum Blossom (13F)
07:30-17:00	Registration		
08:30-09:20	<b>Keynote III</b> Dr. Oussama Khatib Session Chair: Dr. Artur Lugmayr		
09:20-09:50	Coffee Break		

09:50-10:40	<b>Keynote IV</b> Dr. Max Mühlhäuser Session Chair: Dr. Robert Mertens		
10:40-10:45	Intermission		
10:45-11:35	<b>Keynote V</b> Dr. Edward Y. Chang Session Chair: Dr. Viswanathan Swaminathan		
11:35-11:40	Intermission		
11:40-12:40	<b>AIVR (3)</b> Session Chair: Dr. Hiroyuki Tarumi		
12:40-13:40			Lunch
13:40-14:00	<b>Demo/Poster Fast Forward</b> Session Chairs: Dr. Vittorio Cozzolino, TUM, Germany Dr. David A. Shamma, FXPAL, USA <b>Grand Ballroom 3 (13F)</b>		
14:00-16:00	<b>Demo/Poster</b> Demo Chair: Dr. David A. Shamma, FXPAL, USA Poster Chair: Dr. Vittorio Cozzolino, TUM, Germany <b>Grand Ballroom 3 (13F)</b>		
16:00-16:20	Coffee Break		
16:20-18:00	<b>Plenary Panel</b> Moderator: Dr. Wolfgang Huerst		
18:00-18:30	Break		
18:30-21:00	<b>Banquet &amp; Keynote VI</b> Dr. Dick Bulterman Session Chair: Dr. Jeffrey J. P. Tsai <b>Olympus Room I (11F)</b>		
<b>December 12 (Wednesday)</b>			
Place Time	<b>Grand Ballroom 1 (13F)</b>	<b>Grand Ballroom 2 (13F)</b>	<b>Plum Blossom (13F)</b>
07:30-17:00	Registration		
08:30-09:20	<b>Keynote VII</b> Dr. Kien A. Hua Session Chair: Dr. Ramazan Savas Aygun		
09:20-09:50	Coffee Break		
09:50-10:40	<b>Keynote VIII</b> Dr. Hiroaki Ogata Session Chair: Dr. Chun-Ming Chang		
10:40-10:45	Intermission		
10:45-11:35	<b>AIVR (4)</b> Session Chair: Dr. Ker-Jiun Wang		
11:35-11:40	Intermission		
11:40-12:40	<b>AIVR (5)</b> Session Chair: Dr. Hai-Ning Liang		

12:40-13:40		Lunch
13:40-15:40	<b>ETXR</b> Session Chair: Dr. Shih-Wei Sun	
15:40-16:00	Coffee Break	
16:00-17:00	<b>WARM</b> Session Chair: Dr. Yiyu Cai	

## IEEE AIVR 2018 Detailed Program

### December 10 (Monday)

07:30-17:00 Registration

Hallway

08:30-08:40 Opening Remarks

Grand Ballroom 1 & 2

*Jeffrey J.P. Tsai, President, Asia University, Taiwan*

08:40-09:30 Keynote Speech I

Grand Ballroom 1 & 2

Session Chair: *Jeffrey J.P. Tsai, Asia University, Taiwan*

**AI Democratization in Taiwan**

*Sheng-Wei Chen, Academia Sinica, Taiwan*

09:30-09:50 Coffee Break

09:50-10:40 Keynote Speech II

Grand Ballroom 1 & 2

Session Chair: *Jean-Claude Latombe, Stanford University, USA*

**Simulation for Intelligent Systems**

*Vladlen Koltun, Intel, USA*

10:40-10:45 Intermission

10:45-11:35 Paper Session 1 (I)

Grand Ballroom 1

AIVR (1): Methods (I)

Session Chair: *Rob Haelterman, Royal Military Academy, Belgium*

Self-organizing maps for intuitive gesture-based geometric modelling in augmented reality (Full paper)

*Benjamin Felbrich, Gwyllim Jahn, Cameron Newnham and Achim Menges*

Decoding subjective emotional arousal during a naturalistic VR experience from EEG using LSTMs (Short paper)

*Simon M. Hofmann, Felix Klotzsche, Alberto Mariola, Vadim V. Nikulin, Arno Villringer and Michael Gaebler*

Downsizing: The Effect of Mixed-Reality Person Representations on Stress and Presence in Telecommunication (Short paper)

*Michal Joachimczak, Juan Liu and Hiroshi Ando*

11:35-11:40 Intermission

11:40-12:40 Paper Session 1 (II)

Grand Ballroom 1

AIVR (2): Methods (II)

Session Chair: *Simon M. Hofmann, Max Planck Institute for Human Cognitive and Brain Sciences, Germany*

BRIEF: Backward Reduction of CNNs with Information Flow Analysis (Full paper)

*Yu-Hsun Lin, Chun-Nan Chou and Edward Y. Chang*

Objective Assessment of Line Distortions in Viewport Rendering of 360° Images (Full paper)

*Falah Jabar, Maria Paula Queluz and Joao Ascenso*

A Compensation Method of Two-stage Image Generation for Human-AI Collaborated In-situ Fashion Design in Augmented Reality Environment (Full paper)

*Zhenjie Zhao and Xiaojuan Ma*

12:40-13:40 Lunch

Plum Blossom

13:40-16:00 DAIVAR (1)

Grand Ballroom 1

Interface and Experience Design with AI for VR/AR (I)

Session Chair: *Kening Zhu, City University of Hong Kong, Hong Kong*

FoodChangeLens: CNN-based Food Transformation on HoloLens

*Shu Naritomi, Ryosuke Tanno, Takumi Ege and Keiji Yanai*

Encompassing English Language Learners in Virtual Reality

*Eric Nersesian, Adam Spryszynski, Ulysee Thompson and Michael J. Lee*

Comparitive Reality: Measuring User Experience and Emotion in Immersive Virtual Environments

*Adam Greenfeld, Artur Lugmayr and Wesley Lamont*

Design and Development of Interactive Intelligent Medical Agent

*Shu-Chiao Tasi, Hooman Samani, Yu-Wei Kao, Kening Zhu and Brian Jalaian*

Motorcycle Riding Safety Education with Virtual Reality

*Chun-Chia Hsu, Yu Li Cjen, Wen Ching Chou, Shih Hsuan Huang and Kai Kuo Chang*

Converting natural language text to ROS-compatible instruction base

*Takondwa Kakusa and Michael S. Hsiao*

16:00-16:20 Coffee Break

16:20-17:10 DAIVAR (2)

Grand Ballroom 1

Interface and Experience Design with AI for VR/AR (II)

Session Chair: *Kening Zhu, City University of Hong Kong, Hong Kong*

Interface and Experience Design with AI for VR/AR (DAIVAR'18) and AI/ML for Immersive Simulations (AMISIM'18)

*Kening Zhu*

Evaluating the Effects of a Cartoon-like Character with Emotions on Users' Behaviour within Virtual Reality Environments

*Diego Monteiro, Hai-Ning Liang, Jialin Wang, Luhan Wang, Xian Wang and Yong Yue*

Integrating Biomechanical and Animation Motion Capture Methods in the Production of Participant Specific, Scaled Avatars

*Luke Hopper and Nahoko Sato*

**17:10-18:30 Break**

**18:30-21:00 Short Talks & Reception**

Olympus Room I (11F)

Session Chairs: *Wolfgang Huerst, Universiteit Utrecht, The Netherlands*

*Jianquan Liu, NEC, Japan*

## December 11 (Tuesday)

07:30-17:00 Registration

Hallway

08:30-09:20 Keynote Speech III

Grand Ballroom 1 & 2

Session Chair: *Artur Lugmayr, Curtin University, Australia*

**The Age of Human-Robot Collaboration**

*Oussama Khatib, Stanford University, USA*

09:20-09:50 Coffee Break

09:50-10:40 Keynote Speech IV

Grand Ballroom 1 & 2

Session Chair: *Robert Mertens, HSW University of Applied Sciences, Germany*

**Breaking The Glass Wall Between Users and Computers**

*Max Mühlhäuser, Technische Universität Darmstadt, Germany*

10:40-10:45 Intermission

10:45-11:35 Keynote Speech V

Grand Ballroom 1 & 2

Session Chair: *Viswanathan Swaminathan, Adobe Systems, USA*

**Privacy-preserving Precision Medicine with AI, VR, and Blockchain**

*Edward Y. Chang, HTC Health Care, Taiwan*

11:35-11:40 Intermission

11:40-12:40 Paper Session 2

Grand Ballroom 1

AIVR (3): Industry

Session Chair: *Hiroyuki Tarumi, Kagawa University, Japan*

Intelligent Wearable Virtual Reality (VR) Gaming Controller for People with Motor Disabilities (Industry paper)

*Ker-Jiun Wang, Quanbo Liu, Yifan Zhao, Caroline Yan Zheng, Soumya Vhasure, Quanfeng Liu, Prakash Thakur, Mingui Sun and Zhi-Hong Mao*

Graphic Code: a New Machine Readable Approach (Industry paper)

*Leandro Cruz, Bruno Patrão and Nuno Gonçalves*

Virtual Crime Scene (Industry paper)

*Jeroen Nelis, Stef Desmet, Jeroen Wauters, Rob Haelterman, Erwin Borgers and Dimitri Kun*

The Virtual Factory: Hologram-Enabled Control and Monitoring of Industrial IoT Devices (Short paper)

*Vittorio Cozzolino, Oleksii Moroz and Aaron Yi Ding*

12:40-13:40 Lunch

Plum Blossom

13:40-14:00 Demo/Poster Fast Forward Session

Grand Ballroom 3

Session Chairs: *Vittorio Cozzolino, TUM, Germany*

*David A. Shamma, FXPAL, USA*

**14:00-16:00 Demo/Poster Session**

Grand Ballroom 3

**Demo Session**

Session Chair: *David A. Shamma, FXPAL, USA*

Head-Mounted FOV Simulator for User Testing of Maritime Object Detection Tasks

*Susannah Soon, Artur Lugmayr, Andrew Woods and Tele Tan*

AI for Toggling the Linearity of Interactions in AR

*Jing Qian*

Exploring Cultural Heritage in Augmented Reality with GoFind!

*Luca Rossetto*

HoloLearn: Learning through Mixed Reality for People with Cognitive Disability

*Francesco Vona*

Demo: Self-Organizing Maps for Intuitive Gesture-Based Geometric Modelling in Augmented Reality

Benjamin Felbrich, Gwyllim Jahn, Cameron Newnham and Achim Menges

Demo: A Natural Language Programming Application for Lego Mindstorms EV3

*Yue Zhan*

An Augmented Reality Application Using Graphic Code Markers

*Bruno André Santos Patrão*

A Knowledge Oriented Virtual Reality Tool for Exploring Seismic Data

*Wallas Henrique Sousa dos Santos*

**Poster Session**

Session Chair: *Vittorio Cozzolino, TUM, Germany*

**Full papers**

SinkNet: Interactive Sink to Detect Living Habits for Healthcare and Quality of Life using Private Networks

*Hiroaki Tobita.*

A Natural Language Programming Application for Lego Mindstorms EV3

*Yue Zhan and Michael S. Hsiao*

Virtual Reality Conferencing

*Patrick David Pazour, Andreas Janecek and Helmut Hlavacs*

A Method to Build Multi-Scene Datasets for CNN for Camera Pose Regression

*Yuhao Ma, Hao Guo, Hong Chen, Mengxiao Tian, Xin Huo, Chengjiang Long, Shiye Tang, Xiaoyu Song and Qing Wang*

Uncertainty-based Deep Learning Networks for Limited Data Wetland User Models

*Andrew Hoblitzell, Meghna Babbar-Sebens and Snehasis Mukhopadhyay*

Evaluating Engagement of Virtual Reality Games based on First- and Third-Person Viewing Perspectives using EEG and Subjective Metrics

*Diego Monteiro, Hai-Ning Liang, Andrew Abel, Nilufar Baghaei and Rita Monteiro*

### **Short papers**

Exploiting the integration of Wearable Virtual Reality and Bio-sensors for Persons with Neurodevelopmental Disorders

*Franca Garzotto, Nicolò Messina and Vito Matarazzo*

Large Scale Information Marker Coding for Augmented Reality using Graphic Code

*Bruno Patrão, Leandro Cruz and Nuno Gonçalves*

A Perceptual Evaluation of Generative Adversarial Network Real-time Synthesized Drum Sounds in a Virtual Environment

*Minwook Chang, Youngwon Ryan Kim and Jounghyun Kim Gerard*

Supporting the Sense of Unity between Remote Audiences in VR-Based Remote Live Music Support System KSA2

*Tatsuyoshi Kaneko, Hiroyuki Tarumi, Yuki Kubochi, Ryota Yamaguchi, Keiya Kataoka, Daiki Yamashita and Tomoki Nakai*

Understanding Head-Mounted Display FOV in Maritime Search and Rescue Object Detection

*Susannah Soon, Artur Lugmayr, Andrew Woods and Tele Tan*

Trajectory-Based Viewport Prediction for 360-Degree Virtual Reality Videos

*Stefano Petrangeli, Gwendal Simon and Viswanathan Swaminathan*

**Industry papers**

DeepLinQ: Distributed Multi-Layer Ledgers for Privacy-Preserving Data Sharing

*Shih-Wei Liao, Edward Y. Chang, Chun-Ting Liu, Wei-Chen Lin, Pin-Wei Liao, Wei-Kang Fu, Chung-Huan Mei and Emily J. Chang*

Exploring Seismic Data through Virtual Reality and Hybrid Knowledge Base

*Wallas H. S. Dos Santos, Reinaldo Mozart Da Gama E Silva, Rodrigo C. M. Santos and Marcio Moreno*

16:00-16:20 Coffee Break

**16:20-18:00 Plenary Panel Session**

Grand Ballroom 1

AI and VR/AR - Challenges and opportunity, and what role can AIVR play in it?

Moderator: *Wolfgang Huerst, Universiteit Utrecht, The Netherlands*

18:00-18:30 Break

**18:30-21:00 Banquet & Keynote Speech VI**

Olympus Room I (11F)

Session Chair: *Jeffrey J.P. Tsai, Asia University, Taiwan*

**The “u” in Multimedia stands for human**

*Dick Bulterman, CWI Amsterdam, Netherlands*

## December 12 (Wednesday)

07:30-17:00 Registration

Hallway

**08:30-09:20 Keynote Speech VII**

Grand Ballroom 1 & 2

Session Chair: *Ramazan Savas Aygun, University of Alabama in Huntsville, USA*

**The Internet of Things – A New Frontier of Multimedia Research**

*Kien A. Hua, University of Central Florida, USA*

09:20-09:50 Coffee Break

**09:50-10:40 Keynote Speech VIII**

Grand Ballroom 1 & 2

Session Chair: *Chun-Ming Chang, Asia University, Taiwan*

**Towards Evidence Based Education with Educational Big Data and Artificial Intelligence**

*Hiroaki Ogata, Kyoto University, Japan*

10:40-10:45 Intermission

**10:45-11:35 Paper Session 3 (I)**

Grand Ballroom 1

AIVR (4): Applications (I)

Session Chair: *Ker-Jiun Wang, University of Pittsburgh, USA*

A Two-Level Planning Framework for Mixed Reality Interactive Narratives with User Engagement (Full paper)

*Manuel Braunschweiler, Steven Poulakos, Mubbasir Kapadia and Robert W. Sumner*

Machine learning architectures to predict motion sickness using a Virtual Reality rollercoaster simulation tool (Short paper)

*Stefan Hell and Vasileios Argyriou*

A Benchmark of Four Methods for Generating 360° Saliency Maps from Eye Tracking Data (Short paper)

*Brendan John, Pallavi Raiturkar, Olivier Le Meur and Eakta Jain*

11:35-11:40 Intermission

**11:40-12:40 Paper Session 3 (II)**

Grand Ballroom 1

AIVR (5): Applications (II)

Session Chair: *Hai-Ning Liang, Xi'an Jiaotong-Liverpool University, China*

Web-based Virtual Reality development in classroom: From learner's perspectives (Full paper)

*Vinh T. Nguyen, Rebecca Hite and Tommy Dang*

A Study of Situated Product Recommendations in Augmented Reality (Full paper)

*Brandon Huynh, Adam Ibrahim, Yun Suk Chang, Tobias Hollerer and John O'Donovan*

Gesture and Action Discovery for Evaluating Virtual Environments with Semi-Supervised Segmentation of Telemetry Records (Full paper)

*Andrea Batch, Kyungjun Lee, Hanuma Teja Maddali and Niklas Elmqvist*

12:40-13:40 Lunch

Plum Blossom

13:40-15:40 ETRX

Grand Ballroom 1

Emerging Topics in XR

Session Chair: *Shih-Wei Sun, Taipei National University of the Arts, Taiwan*

Machine-Learning Based Fitness Behavior Recognition from Camera and Sensor Modalities

*Chih-Chieh Fang, Ting-Chen Mou, Shih-Wei Sun, and Pao-Chi Chang*

Combining leap motion with unity for Virtual Glove Puppets

*Chi-Yen Lin, Zhang-Hao Yang, Heng-Wei Zhou, Tsai-Ni Yang, Hong-Nien Chen, and Timothy K. Shih*

Towards A Music Visualization on Robot (MVR) Prototype

*Pei-Chun Lin, David Mettrick, Patrick C. K. Hung, and Farkhund Iqbal*

Omni-learning XR technologies and Visitorcentered Experience in the Smart Art Museum

*Tsang-Gang Lin, Hsiang-Lan Shih, Chun-Ting Lee, Hui-Yu Hsieh, Yi-Yuan Chen, and Chien-Kuo Liu*

A Combination of Feedback Control and Vision-Based Deep Learning Mechanism for Guiding Self-Driving Cars

*Wen-Yen Lin, Wang-Hsin Hsu, and Yi-Yuan Chiang*

Visual Augmentation of Printed Materials with Intelligent See-through Glass Displays: A Prototype based on Smartphone and Pepper's Ghost

*Frode Eika Sandnes and Evelyn Eika*

15:40-16:00 Coffee Break

16:00-17:00 WARM

Grand Ballroom 1

AI & VR in Medicine

Session Chair: *Yiyu Cai, Nanyang Technological University, Singapore*

Augmented Reality Simulation of Cardiac Circulation using APPLearn(Heart)

*Yiyu Cai*

The prospect for the application of the surgical navigation system based on artificial intelligence and augmented reality

*Yang Liu and Pinpin Tang*

A VR-based Simulator for training surgical skills in the procedure of catheter ablation

*Haoyu Wang, Sheng Jiang and Jianhuang Wu*