

Co-located with IEEE ISM 2019

## CALL FOR PARTICIPATION

Research in Virtual Reality (VR) is concerned with computing technologies that allow humans to see, hear, talk, think, learn, and solve problems in virtual and augmented environments. Research in Artificial Intelligence (AI) addresses technologies that allow computing machines to mimic these same human abilities. Although these two fields evolved separately, they share an interest in human senses, skills, and knowledge production. Thus, bringing them together will enable us to create more natural and realistic virtual worlds and develop better, more effective applications. Ultimately, this will lead to a future in which humans and humans, humans and machines, and machines and machines are interacting naturally in virtual worlds, with use cases and benefits we are only just beginning to imagine.

The **IEEE International Conference on Artificial Intelligence and Virtual Reality (AIVR 2018)**, now in its second instalment, is a unique event, addressing researchers and industries from all areas of AI as well as Virtual, Augmented, and Mixed Reality. It provides an international forum for the exchange between those fields, to present advances in the state of the art, identify emerging research topics, and together define the future of these exciting research domains. We invite researchers from Virtual, as well as Augmented Reality (AR) and Mixed Reality (MR) to participate and submit their work to the program. Likewise, any work on AI that has a relation to any of these fields or potential for the usage in any of them is welcome.

**Areas of interest** for the technical program include but are not limited to:

### Systems, including techniques, performance, & implementation

- System components, virtual reality platforms
- AI platforms for VR/AR, cloud-based platforms
- Data generation, manipulation, analysis, and validation
- Tracking, physical environment mapping, registration
- Vision for VR/AR, deep learning for VR/AR
- Standards and theoretical models for AI and/or VR

### Content creation and modelling

- Generation of immersive environments and virtual worlds
- Environments for gaming, simulation, training
- Visualization, optimized and realistic rendering
- Geometric modelling and design in immersive settings
- Animations, crowd-simulation, character modelling
- Customization and personalization (e.g., for training)

### Cognitive aspects, perception, user behaviour

- Semantic and cognitive aspects of virtual reality
- Depth perception, multimodal perception
- Behaviour and activity generation
- Representations of self (avatars), embodiment, presence
- Virtual agents, conversational non-player characters (NPCs)
- Understanding and modelling human behaviour, emotions

### AI technologies

- Search, planning, reasoning
- Knowledge representation, natural language processing
- Robotics and perception
- Multi-agent systems
- Statistical learning, deep learning

### Interactions / interactive and responsive environments

- Multimodal interaction and experiences in VR/AR
- Machine learning for multimodal interaction
- Human-virtual user/agent interaction
- Human to human communication in virtual environments, collaboration and communication
- Dialogue modelling and generation, conversational and natural language interfaces, speech interaction for AR/VR
- Navigation and spatial orientation in VR
- Interaction devices, Brain-Computer Interfaces (BCI)

### Applications and use cases

- Data and knowledge representation, problem solving
- Visualization concepts (including, e.g., spatial visualization, multimodality for visualization) and domains (e.g., scientific visualization)
- Arts, leisure, and entertainment
- Gaming and game narratives, immersive storytelling and gameplay
- Education, training, simulation
- Business, prototyping, productivity, design and architecture, evaluation
- Telepresence and collaboration, social interactions
- Healthcare and therapy
- Evaluation metrics and methodologies
- Quality of Experience (QoE)

## SUBMISSIONS

AIVR 2019 will feature different submission categories, including full and short papers, industry papers, demos and video papers. Proceedings will be published by IEEE. Details on submission formats and categories will be posted on the conference's website (<http://ieee-aivr.org>). Deadlines for paper submission are expected to be in July 2019.

## VENUE & LOCATION

AIVR 2019 will take place at the Wyndham Hotel Bayside, located right at the beautiful San Diego Bay in San Diego, California, USA.