

ICIITCEE-2023
BNM Institute of Technology, Bengaluru
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***** **Special Session Proposal** *****

Special Session:

Computer Graphics and Visualization

Proposer full name and affiliation (names, designation, affiliation and contact emails):

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Computer Graphics and Visualization

Special Track of *Computer Graphics and Visualization* will highlight on efficient and effective digital image and Computer graphics technologies and systems, and provide a central forum for scientists, researchers, engineers and vendors from different disciplines to exchange ideas, identify problems, investigate relevant issues, share common interests, explore new directions, and initiate possible collaborative research and system development. This track/ special issue will significantly benefit a large variety of academic and industrial sectors.

Computers & Graphics is enthusiastic to distribute information on research and applications of **computer graphics** (CG) techniques. The Special track encourages articles on:

- Research and applications of **interactive computer graphics**. We are on the whole interested in novel interaction techniques and applications of CG to problem domains.
- State-of-the-art papers on late-breaking, cutting-edge research /innovations on CG.
- Information on pioneering uses of graphics principles and technologies.
- Tutorial papers on both teaching CG principles and innovative uses of CG in learning/education.

Computers Graphics and visualization delivers a medium to interconnect information regarding interactive CG and CG applications. The special track focuses on interactive computer graphics, visualization and novel input modalities including virtual environments, and, within this scope, on graphical models, data structures, languages, picture manipulation algorithms and related software.

This special issue aims to provide a high profile and leading-edge forum for investigators and engineers to contribute and publicize original techniques and results on image analysis and understanding. It aims to exchange of information vis-à-vis the medical use of new developments in imaging diagnosis, intervention, and follow up. Image analysis and classification is a progressive and fast-moving research discipline. Recent advances in image

processing have produced an explosion in the use of images in a diversity of engineering and scientific applications. It is a mature but exciting and fast developing field, which underpins developments in cognate fields such as computer vision, image processing, text and document analysis and neural networks. It is closely akin to machine learning/ Deep learning, Computer Vision/Machine Vision and soft computing, and also finds applications in fast emerging areas such as biometrics, bioinformatics, multimedia data analysis and most recently data science. The proposal publishes work that proposes new image interpretation and classification or addresses the application of such methods to real world scenes. It seeks to strengthen a deeper understanding in the discipline by encouraging the quantitative comparison and performance evaluation of the proposed methodology.

This issue presents original research on the theoretical, experimental and applied aspects of image analysis, extraction, classification and clustering. The proposal focuses on areas such as feature selection, feature extraction, large data problems, online learning, classifiers and perception models. This proposal acknowledges and encourages submissions reflecting the importance of large data analysis and online learning in industrial applications. Major topics include mathematical theory of image pattern recognition, raw image representation, computer vision, machine learning, computer graphics, software, specialized computer architectures, applications, and related areas.

More specifically categorization, this Special Session will cover the following research and application issues:

- Image Processing
 - Image acquisition and storage
 - Image pre-processing
 - Image coding and transmission
 - Image indexing and retrieval
- Image Analysis and Understanding
 - Image segmentation and measurement
 - Texture and motion analysis
 - Image matching and scene interpretation
 - 3-D modeling
- Pattern Recognition Application
 - Statistical, structural and neural approaches
 - Character, speech, image and video applications
 - Biometrics technologies and system
- Computer Vision
 - Active, real-time and stereo computer vision
 - VLSI image model, algorithm and architecture
 - Multi-modal image systems
- Graphics Modeling, Rendering and Animation
 - Graphics algorithms
 - Modeling methods
 - Rendering algorithms
 - Animation
- Visualization, Virtual Reality and Augmented Reality
 - Visualization
 - Virtual Reality and Virtual Environment
 - Augmented Reality
 - Media immersion
- Multimedia Systems and Techniques
 - Multimedia algorithms
 - Multimedia communication and CSCW
 - Multimedia database
 - Multimedia systems

- Graphics User Interface
 - User interface management system
 - Multi-agent/Artificial life/Intelligent agent
 - Multi-modal user interface
- Image and Graphics Applications
 - Medical and bio-medical
 - Telecommunication and remote sensing
 - Document and industrial
 - Security (internet, digital watermarking,)
 - Other applications

The list of possible Sub-topics includes, but is not limited to:

- Natural object recognition and analysis
 - New algorithms and/or technologies for biometrics under imaging modalities
 - Element of visual perception
 - Fourier transforms, Extension to 2 - D, DCT, Walsh transform, Hadamard transforms to represent imaging modalities
 - Huffman and contour coding
 - Restoration Models: Constrained & Unconstrained
 - Image coding
 - Vision-based human-computer interaction
 - Human activity and behaviour understanding
 - Data fusion from multiple sensor input,
 - Image databases
 - Medical scanning techniques
 - image-guided therapy
 - Computer-aided diagnosis
 - Robotic surgery and imaging
 - Augmented-reality medical visualization
 - Imaging genomics
 - Computerized radiology, oncology, and surgery
 - Image scanning, sampling, and tessellation
 - Image representation by partial information
 - Local and global schemes of image representation
 - Analog and digital image processing
 - Fractals and mathematical morphology
 - Image understanding and scene analysis
 - Deterministic and stochastic image modeling
 - Visual data reduction and compression
 - Image coding and video communication
 - Biological and medical imaging
 - Early processing in biological visual systems
 - Psychophysical analysis of visual perception
 - Astronomical and geophysical imaging
 - Visualization of nonlinear natural phenomena
 - Real-time imaging
 - Machine learning for image classification
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