

# VCIP 2022 Special Session

## ● Title

3D Point Cloud Acquisition, Processing and Communication (3DPC-APC)

## ● Abstract

As the developments of 3D acquisition devices, point clouds have become more and more popular in diverse industrial applications by providing the immersive visual experience and high-precision 3D modeling capability. Effective compression and streaming technologies play a critical role to reduce storage and transmission costs of massive point cloud data. Hence, point cloud coding and communication have emerged as the new research directions in the past few years. Efficient coding algorithms can exploit multi-dimensional redundancies in point cloud data, where new coding tools and techniques (either non-learning or learning based) should be devised for point clouds due to their unique 3D irregular structure and the way human eyes or machine vision applications assess their quality. Point cloud datasets, as well as visual quality evaluation models are also important for the development of this research field. Moreover, the related processing techniques to enhance the quality or increase the number of points can further improve the rate-distortion performance as a whole. Such techniques include upsampling, completion, denoising, and compression artifact removal.

This special session solicits technical contributions on 3D point cloud acquisition, processing and communication to effectively improve the quality of point clouds in practical applications. Both non-learning and learning methods are sought. Topics of interest include, but are not limited to:

- Datasets for large-scale point clouds
- Point cloud quality assessment and quality-of-experience (QoE)
- Geometry-based and video-based point cloud compression
- Lossless/Lossy geometry/attribute compression of point clouds
- Prediction, transform and entropy coding tools for point cloud coding
- End-to-end learning-based point cloud coding
- Enhancement and restoration processing techniques for degraded point clouds
- Standards for point cloud compression and streaming
- Point cloud coding, processing and communication systems
- Joint processing and analysis for multi-modality media with point cloud

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