ICIP 2021 Special Session

Title: 3D Visual Perception and Understanding

The advances of computing techniques, graphics hardware, and networks have witnessed the wide applications of 3D data in various domains, such as 3D graphics, entertainment, medical industry and 3D model design. The proliferation of such applications has led to large scale 3D visual data, while effective 3D processing tools to manipulate these data are still at their infancy. Generally, how to effectively and efficiently percept and understand such 3D visual data has become an urgent but challenging task in recent years. Lidar, monocular and traditional cameras have played important roles on this. To facilitate the applications in practice, it is still important to further exploit advanced and hybrid mechanism on 3D visual perception. Recent years have also witnessed the rapid progress of deep neural networks on 3D visual analysis, such as 3D visual representation, recognition, reconstruction, and content understanding, which have wide applications in unmanned driving, medical diagnosis assistance, and virtual reality. However, there is still a long way towards effective 3D semantic understanding and applications, especially confronting the multi-modal 3D data and complex application scenarios. The primary objective of this special session fosters focused attention on the latest research progress in the area of 3D visual perception and understanding and seeks original contribution of works which addresses the challenges from 3D data acquisition, representation, recognition, semantic analysis and applications in various applications, such as unmanned driving and medical field.

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