

## **Tutorial Title: Visual Content Perception and Understanding**

**Tutorial Abstract:** Over the past decades, there has been a growing interest in visual content perception and understanding with broad multimedia applications. As an important component of visual perception, visual quality assessment has attracted extensive attention from both academia and industry. It can be used not only in monitoring image quality distortions, but also in optimizing various image processing algorithms/systems. Visual recognition aims to analyze visual content from images and videos, which plays an important role in many visual content understanding systems such as face recognition, person re-identification, and visual search. In this tutorial, we provide the past achievements, current status, and open problems of visual quality assessment and visual recognition.

**Table of Content:** This tutorial will mainly introduce the development of visual quality assessment and visual recognition. In the first section, we briefly introduce the achievements of visual quality assessment during the past decade, and provide the key advantages and disadvantages of existing visual quality assessment metrics. Then we will introduce some of new visual quality assessment methods proposed in our team, mainly including two types: general-purpose and application-specific approaches. Some open problems in visual quality assessment are also discussed for the potential research in the future. In the second section, we introduce the basic concept of distance metric learning, and show the key advantages and disadvantages of existing distance metric learning methods in different visual understanding tasks. Then, we introduce some of our newly proposed distance metric learning methods such as deep metric learning, cost-sensitive metric learning, and Hamming distance metric learning, respectively. Lastly, we discuss some open problems in distance metric learning to show how to further develop more advanced metric learning algorithms for visual understanding in the future.

### **Presenters**

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research interest includes visual quality assessment, visual attention, computer vision, *etc.* He has published over 90 scientific papers in these areas, including over 30 papers are published in the IEEE Transactions/Journals. He is an IEEE MMTC member. And he serves as an associate editor of IEEE Access and Signal Processing: Image Communications. He is/was a TPC Co-Chair for ISITC 2016, a Program Chair for the Third Workshop on Emerging Multimedia Systems and Applications, an Area Chair for VCIP 2016, ICME 2016, ICME 2017, *etc.* He is a member of IEEE.

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