

## Computational Models toward Aesthetic Quality Assessment of Images

### Abstract

How to assess image quality sensed by humans in an objective manner shapes many algorithms and systems related to visual intelligence, since definition and measurement of visual signal quality play a central role in practice, like image acquisition, compression, transmission, and various client-end tasks. Automatic visual quality assessment can be divided into two major categories: 1) technical quality assessment (TQA) to evaluate visual distortions, e.g., noise, blur, and different processing artifacts; 2) aesthetic quality assessment (AQA) to focus on aesthetic factors, e.g., content, composition, depth of field, color harmony, semantics, and even personality, culture and so on. During the past decade, there have been much more research activities for TQA but AQA has started to attract wider interests. In this talk, we will first give a review of the advances on TQA. Then, we introduce the principles and recent research progress on AQA, including generic AQA (G-AQA) and personalized AQA (P-AQA). We will also discuss emerging AQA-related topics, including aesthetics-assisted image editing, visual processing, imaging system design/optimization, smart photography, and AIGC.

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Weisi Lin is an active researcher in image processing, perception-based signal modelling and assessment, video compression, and multimedia communication. He had been the Lab Head, Visual Processing, Institute for Infocomm Research (I2R), Singapore. He is currently a Professor in School of Computer Science and Engineering, Nanyang Technological University (NTU), Singapore, where he also serves as the Associate Chair (Research). He is a Fellow of IEEE and IET. He has been awarded Highly Cited Researcher 2019, 2020, 2021 and 2022 by Clarivate Analytics, and elected for the Research Award 2023, College of Engineering, NTU. He has been a Distinguished Lecturer in both IEEE Circuits and Systems Society (2016-17) and Asia-Pacific Signal and Information Processing Association (2012-13). He has been an Associate Editor for IEEE Trans. Neural Networks Learn. Syst., IEEE Trans. Image Process., IEEE Trans. Circuits Syst. Video Technol., IEEE Trans. Multim., IEEE Sig. Process. Lett., Quality and User Experience, and J. Visual Commun. Image Represent. He has been a TP Chair for several international conferences and is a General Co-Chair for IEEE ICME 2025. He believes that good theory is practical and has delivered 10+ major systems for industrial deployment with the technology developed.