

## Accepted Manuscript

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Based on Robust Statistics

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PII: S0925-2312(18)30778-1  
DOI: [10.1016/j.neucom.2018.06.042](https://doi.org/10.1016/j.neucom.2018.06.042)  
Reference: NEUCOM 19720

To appear in: *Neurocomputing*

Received date: 23 October 2017  
Revised date: 29 March 2018  
Accepted date: 14 June 2018

Please cite this article as: Zhengda Zeng, Wenming Yang, Wen Sun, Jing-Hao Xue, Qingmin Liao, No-reference Image Quality Assessment for Photographic Images Based on Robust Statistics, *Neurocomputing* (2018), doi: [10.1016/j.neucom.2018.06.042](https://doi.org/10.1016/j.neucom.2018.06.042)



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## No-reference Image Quality Assessment for Photographic Images Based on Robust Statistics

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### Abstract

No-reference image quality assessment (NR-IQA) is developing rapidly, but there lacks of research on exploring robust statistics to improve the prediction accuracy and monotonicity of NR-IQA algorithms, in particular for assessing photographic images captured by different digital cameras where a variety of unknown distortions may happen. Hence this paper proposes a novel robust-statistics-based NR-IQA method (termed RSN) for photographic images. In RSN, we present three types of features based on robust statistics: robust natural scene statistics of multiple components, robust multi-order derivatives, and robust complementary features in the frequency domain. Then support vector regression is applied to predict image quality using the extracted features. Experimental results show that RSN remarkably outperforms state-of-the-art NR-IQA methods on the CID2013 database of photographic images, as well as on the popular LIVE and TID2013 databases.

*Keywords:* Image quality assessment (IQA), no-reference/blind IQA, camera image, robust statistics, natural scene statistics (NSS).

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