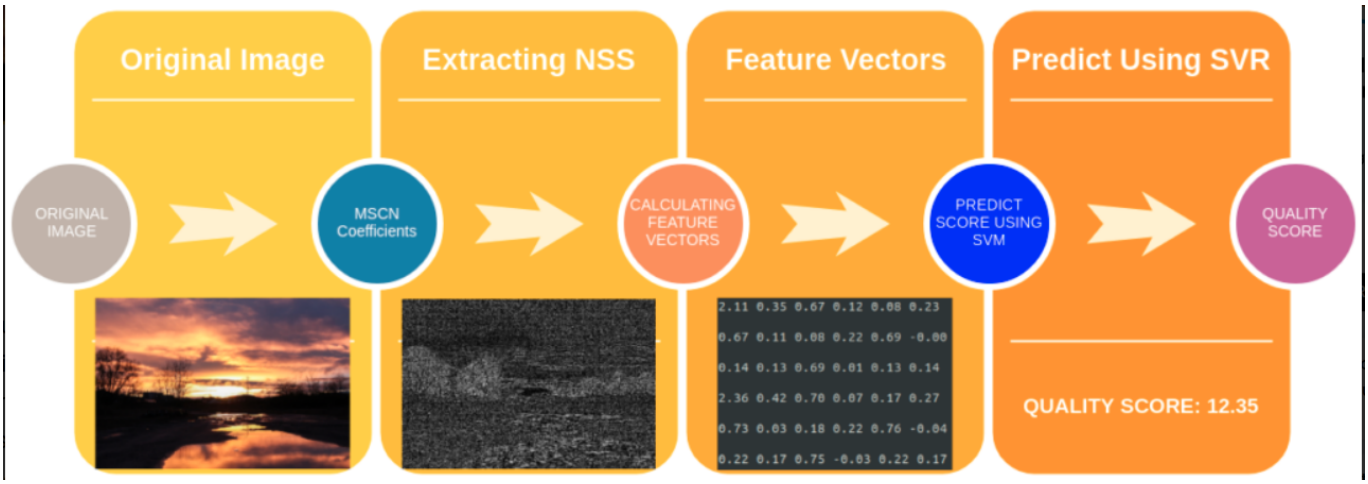
Objective blind Image Quality Assessment

BRISQUE - Blind/Referenceless Image Spatial Quality Evaluator



DIQA - Deep Image Quality Assessment

- characteristics:
  - introduces low-pass filtering to the input image as a normalization
  - uses 9 Conv layers with 3x3 kernels
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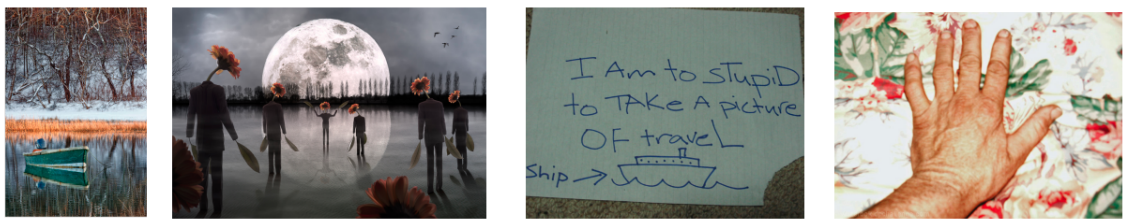
- paper

NIMA - Neural Image Assessment



(a) 6.36 (±1.04) (b) 7.84 (±2.08) (c) 2.62 (±2.15) (d) 3.12 (±1.28)

Fig. 2: Some example images from AVA dataset [1] with quality score $\mu(\pm\sigma)$, where μ and σ represent mean and standard deviation of score, respectively. (a) high aesthetics and low unconventionality (challenge name: "*Best of 2007*", $\mu = 6.36$, $\sigma = 1.04$), (b) high aesthetics and high unconventionality (challenge name: "*Extreme super moon*", $\mu = 7.84$, $\sigma = 2.08$), (c) low aesthetics and high unconventionality (challenge name: "*Travel*", $\mu = 2.62$, $\sigma = 2.15$), (d) low aesthetics and low unconventionality (challenge name: "*Pieces of the human form*", $\mu = 3.12$, $\sigma = 1.28$).

- characteristics:
  - focuses on aesthetics and technical quality

TABLE I. TYPES OF DISTORTIONS USED IN OUR IMAGE DATABASE

№	Type of distortion (four levels for each distortion)	Correspondence to practical situation	Accounted HVS peculiarities
1	Additive Gaussian noise	Image acquisition	Adaptivity, robustness
2	Additive noise in color components is more intensive than additive noise in the luminance component	Image acquisition	Color sensitivity
3	Spatially correlated noise	Digital photography	Spatial frequency sensitivity
4	Masked noise	Image compression, watermarking	Local contrast sensitivity
5	High frequency noise	Image compression, watermarking	Spatial frequency sensitivity
6	Impulse noise	Image acquisition	Robustness
7	Quantization noise	Image registration, gamma correction	Color, local contrast, spatial frequency
8	Gaussian blur	Image registration	Spatial frequency sensitivity
9	Image denoising	Image denoising	Spatial frequency, local contrast
10	JPEG compression	JPEG compression	Color, spatial frequency sensitivity
11	JPEG2000 compression	JPEG2000 compression	Spatial frequency sensitivity
12	JPEG transmission errors	Data transmission	Eccentricity
13	JPEG2000 transmission errors	Data transmission	Eccentricity
14	Non eccentricity pattern noise	Image compression, watermarking	Eccentricity
15	Local block-wise distortions of different intensity	Inpainting, image acquisition	Evenness of distortions
16	Mean shift (intensity shift)	Image acquisition	Light level sensitivity
17	Contrast change	Image acquisition, gamma correction	Light level, local contrast sensitivity

Table from A database for evaluation of full reference visual quality assesment metrics

Additional Resources

Introduction to IQA DIQUA implementation tutorial