The two databases here described were generated to evaluate the role of affective content while assessing image quality (Corchs et al., 2018) [1]. The databases are composed of images JPEG-compressed together with the subjective quality scores collected during psychophysical experiments.

To reduce interferences in quality perception due to image semantic, we have restricted the semantic content, choosing only close-ups of face images, and we have considered only two emotion categories (happy and sad). We have selected 23 images with happy faces and 23 images with sad faces of high quality.

For what concerns image quality we have considered JPEG-distortion with 4 levels of compression, corresponding to q-factors 10, 15, 20, 30.

The first image database, hereafter called MMSP-FaceA, is thus composed of 230 images \((23 + 23) \times 5\) quality levels (including the original high quality pristine images).

To better consider only interferences in quality perception due to affective content, we have generated a second image database where the background of images belonging to MMSP-FaceA has been cut off. This second image database is labelled as MMSP-FaceB.

Psychophysical experiments were conducted, on a controlled web-based interface, where participants rated the image quality of the two databases in a five point scale.

The two final databases MMSP-FaceA and MMSP-FaceB are
thus composed of 230 images each, together with the raw quality scores assigned by the observers, and are available at our laboratory web site: [www.mmsp.unimib.it/download](http://www.mmsp.unimib.it/download).

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### Specifications table

| Subject area          | Computer Vision                           |
|-----------------------|-------------------------------------------|
| More specific subject area | Image quality                           |
| Type of data          | Images, Excel files                       |
| How data was acquired | Face images of high quality were downloaded from the web or collected from database in the literature and jpeg compressed. Subjective scores were acquired using a controlled web-interface. |
| Data format           | Data format for images are jpeg, and png; subjective data are collected in xlsx excel format. |
| Experimental factors  | The pristine image dataset is composed of 23 images depicting happy faces, and 23 images depicting sad faces. Form these images we obtained two databases: MMSP-FaceA composed of the 46 pristine images and their jpeg compressed versions obtained considering 4 different q-factors; and MMSP-FaceB, obtained form MMSP-FaceA images cutting off the background. |
| Experimental features | To collect the subjective data, we have adopted a Single Stimulus method, where all the images are individually shown. A controlled web-interface was used in the experiment, where images were presented for an unlimited time. The images were shown in random order, different for each subject. Participants rated the image quality using five discrete levels, ranging from poor to excellent quality. |
| Data source location  | University of Milano Bicocca, Italy       |
| Data accessibility    | Web site of the MultiMedia Signal Processing Laboratory at the University of Milano Bicocca [www.mmsp.unimib.it/download](http://www.mmsp.unimib.it/download) |
| Related research article | Corchs S., Ciocca G. and Gasparini F. (2018). Quality Assessment of JPEG-distorted Face Images: Influence of Affective Content. In Proceedings of the 15th International Joint Conference on e-Business and Telecommunications - Volume 2: ICETE, ISBN 978-989-758-319-3, pages 386-393. DOI: 10.5220/0006853405520559 |

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### Value of the data

- Subjective image quality assessment plays a fundamental role in different fields, from image processing applications to artificial intelligence and human computer interface. Nowadays Internet of Things and wearable computing is an active field of research and several smart devices are able to capture emotional reactions to audio visual stimuli. Within this field, knowing how the quality of the signal influences its affective perception can be useful in human computer interactions.

- In general Image Quality Assessment (IQA) studies consider images belonging to different image classes such as indoor, outdoor, landscape, close-up, etc., depicting several semantic contents. However the semantic content of an image can influence in different ways user's perception of quality [1,2]. IQA databases available in the literature have in general less than 30 pristine images (see for instance the review in [3]). Our database has 46 pristine images of the same semantic content (face). Our databases are the only ones in the literature that restrict the semantic content.
IQA studies do not in general take into account how does the affective image content influence the quality perception process itself. Only van der Linde and Doe [4] addressed the affective dimension issue, analyzing the influence of affective image content on subjective quality assessment. They considered images depicting several different semantic contents that elicit different levels of valence and arousal.

To reduce variables that can interfere in the quality evaluation, our databases not only limit the semantic content but also consider only two emotion categories: happiness and sadness.

To further disentangle possible interferences in the perception of image quality, we repeated the same psychophysical experiment on the chosen images where the background has been removed.

Our data are easily comparable with IQA data available in the literature as they are acquired with similar psychophysical experiments.

Several face datasets are available in the literature, that focus on face detection and recognition, or that are annotated with respect to face attributes, or emotions. Our databases are the only ones that consider faces with respect to image quality perception.

1. Data

A database of 46 pristine images depicting close-ups of happy (23) and sad (23) faces was collected and processed as follows:

- A larger database of images (about 200) depicting close-ups of happy and sad faces was initially gathered, considering images belonging to the NAPS database [5] and images downloaded from the internet with a Creative Common License (www.pixabay.com and www.flickr.com). NAPS is a database of high quality photographs depicting people, faces, animals, objects, and landscapes collected in the field of affective computing, to evaluate emotional states induced by visual stimuli. The NAPS DB is freely accessible to the scientific community for non-commercial use by request at http://naps.nencki.gov.pl.

- The collected images were evaluated by 5 subjects, the three authors of this work and two students involved in this research. Only images for which all the five subjects agreed with respect to the presence of happy or sad faces were selected, generating a database of 46 images. The list of the url

![Fig. 1. The 23 pristine happy-face images.](image-url)
of the chosen images is also available at www.mmsp.unimib.it/download. The 23 happy face images chosen are depicted in Fig. 1, while the 23 sad ones are depicted in Fig. 2.

- Faces were cropped form these 46 selected images, partially keeping the background to obtain a new dataset where the size of all faces is similar.
- Face images were subsampled to have height size equal to 512 pixels. This size was chosen as adopted by several image quality databases in the literature [6,7].

Starting from these 46 pristine images, the two image databases MMSP-FaceA and MMSP-FaceB, are obtained as follows:

- MMSP-FaceA database: each of the 46 pristine images were JPEG-distorted using the MATLAB `imwrite.m` function with the following q-factors: 10, 15, 20, 30. The reason of the choice of these
q-factors is twofold: 1) to produce visible JPEG artefacts; 2) to make it possible the comparison with the results obtained by van der Linde and Doe [4].

The MMSP-FaceA database is thus composed of 230 images = (23 happy + 23 sad) x 5 quality levels (including the pristine high quality images).

- MMSP-FaceB database: it is obtained from the 230 images of the MMSP-FaceA database cutting out the background (see images in the last column of Fig. 3).

2. Experimental design, materials, and methods

Two different psychophysical experiments were conducted where the task was to evaluate image quality. The first one on the MMSP-FaceA database, and the second one on the MMSP-FaceB database. The observers were explicitly instructed not to judge the emotional nor the affective content of the image.

We adopted a Single Stimulus method [8], where all the images were individually shown in random order, different for each subject. Participants rated the image quality in five discrete scales: from one star (poor quality) to five stars (excellent quality), (see Fig. 4).

Observations were asked to judge the quality of each image through a web-interface. The workstations adopted were placed in an office environment with normal indoor illumination levels. The ambient light levels were maintained constant. A grayscale chart was shown to calibrate the brightness and the contrast of the monitor. Ishihara color test were preliminarily presented to the observers for estimating color vision deficiency. Subjects who did not pass this test were not further considered.

In order to get the observers accustomed to the experiment, seven practice trials not belonging to the MMSP databases were presented at the beginning of each experiment. The corresponding data were discarded and not considered for any further analysis. The participants who took part in the experiments were recruited in the Department of Informatics System and Communication of the University of Milano Bicocca and were either students or researchers.

All the experiments reported in this article were conducted in accordance with the Declaration of Helsinki. Informed consent was given by all participants and the data was collected anonymously.

To avoid fatigue effects, the 230 images of each database were divided in two subsets of 115 images each. Therefore, two sessions of experiments were performed for each of the considered database.

![Fig. 4. Screenshot of the web-interface.](image-url)
In the first experiment (MMSP-FaceA database), 23 observers participated in the first session, (13 females, mean age 31 ± 10) and 17 (10 females, mean age 27 ± 10) in the second one for a total number of ratings collected of 115 × 23 + 115 × 17 = 4600.

In the second experiment (MMSP-FaceB database), 21 observers participated in the first session (10 females, 30 mean age ± 10), and 19 (11 females, 32 mean age ± 8) observers in the second one for a total number of ratings collected of 115 × 21 + 115 × 19 = 4600.

For each of the 230 images in each database, we collected the set of discrete values (ratings) assigned by the observers.

The data available with each of our two datasets are:

- A list of the url of the 46 original images.
- 45 pristine images and their JPEG-distorted images. For the image which is not under the creative common license we only provide its name and the reference to the database where it can be found.
- The subjective scores (from 1 to 5) for each image assigned by each observer in excel files. These data are divided by database (MMSP_FaceA and MMSP_FaceB) and with respect to the two different experimental sessions performed for each experiment.
- Mean opinion scores and statistical mode in the excel files.

Acknowledgments

We acknowledge Giorgio Pilotti for his assistance during the experimental sessions.

Transparency document. Supporting information

Supplementary data associated with this article can be found in the online version at https://doi.org/10.1016/j.dib.2019.103700.

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