
Supplementary material for "RELLISUR: A Real Low-Light Image Super-Resolution Dataset"

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1 Motivation

The RELUSUR dataset was created to fill the gap between low-light image enhancement and low-resolution image enhancement, and advance machine learning applications in the area of image processing. The dataset was created by researchers at the Visual Analysis and Perception laboratory at Aalborg University Denmark. The creation of the dataset was funded by Milestone Systems A/S, Brøndby Denmark and Danmarks Frie Forskning under grant number 8022-00360B.

2 Composition

The dataset is composed of 850 distinct image sequences depicting various natural in and outdoor scenes located in Aalborg Denmark. Each sequence consist of five low-light images of varying light levels and the corresponding normal-light images which are available in three different resolutions. All images in the dataset are a cropped version of the original raw image. Due to privacy issues we do not plan to release the raw images, as these can depict person sensitive information due to the wider field-of-view. The dataset is self contained and does not contain other assets such as labels or metadata. We have manually screened the dataset to ensure that no images in the dataset enables identification of individuals or contain content that could be considered offensive, insulting, or threatening.

3 Dataset splits

We provide a suggested training, validation, and testing split for the RELISUR dataset, and encourage researchers to use this split to enable direct comparison with future works. We created the split by randomly sampling sequences from the full dataset, using the `train_test_split()` function in Scikit-Learn¹, into 85% for training, 5% for validation, and 10% for testing. This results in 722, 43, and 85 train, validation, and test sequences, respectively.

4 Data collection and labeling

The dataset is collected with a Canon EOS 6D camera equipped with a Canon 70-300mm L IS USM zoom lens. The images was stored in RAW+JPG format but only the pre-processed images stored in PNG format will be released. The collected images was pre-processed as described in our paper, to remove distortion and register all images in a sequence. The train, validation and test parts of the dataset can be found in the respective folders. Subfolders named LLLR contains the low-light low-resolution images, while subfolders named NLHR contains the normal-light high-resolution images of three different scale levels (X1, X2, X4). The LLLE images are named as 000xxx-y.y.png

¹https://scikit-learn.org/stable/modules/generated/sklearn.model_selection.train_test_split.html

where xxx corresponds to the sequence and -y.y corresponds to the negative exposure compensation value. Note that the five different under-exposure levels all corresponds to the same NLHR image.

5 Scripts

If desired, duplicates of the NLHR images, with names corresponding to the five LLLR images, can be create using the included script. The script can be used by simply issuing \$python create_nlhr_duplicates.py in the main dataset folder. The script will automatically create sub-folders named "NLHR-Duplicates" for each split, where the duplicated files will be placed.

6 Uses

The dataset is intended to be used to facilitate machine learning research aimed at solving the reconstruction of images that are degraded by both low-light and low-resolution. Other than the benchmarking included in the paper, the dataset has not yet been used for other tasks.

7 Distribution

The dataset is made publicly available under the Creative Commons BY-NC-SA licence at Zenodo under DOI: <https://doi.org/10.5281/zenodo.5234969>. No third parties has imposed IP-based or other restrictions on the data associated with the instances. Furthermore, no export controls or other regulatory restrictiopns apply to the dataset or individual instances.

8 Hosting and maintenance

The dataset will be maintained by the Visual Analysis and Perception laboratory at Aalborg University ². The first author will provide support and can be contacted via e-mail at anaa@create.aau.dk. The dataset is hosted by <https://zenodo.org>, who will provide versioning of the dataset in case of updates.

9 Author statement

The authors confirm that all data in the RELISUR dataset are under Creative Commons BY-NC-SA licence ³ and bear responsibility in case of violation of copyrights.

This means that this dataset is made freely available to academic and non-academic entities for non-commercial purposes such as academic research, teaching, scientific publications, or personal experimentation. Permission is granted to use the data given that you agree:

- That the dataset comes "AS IS", without express or implied warranty.
- That you include a reference to the RELISUR Dataset in any work that makes use of the dataset.
- That you may not use the dataset or any derivative work for commercial purposes as, for example, licensing or selling the data, or using the data with a purpose to procure a commercial gain.
- That you may distribute, remix, adapt, and build upon the dataset for noncommercial purposes only, as long as attribution is given to the author.
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A copy of this license agreement is included with the dataset.

²<https://vap.aau.dk/>

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