

Image Forensics Features

We extracted 7 types of image forensics feature and stored them as comma-separated values (CSV) files. The format of each line in the csv files is:

<image_id>, <number of rows>, <number of columns>, <the extracted matrix>

For example:

```
boston_fake_34, 4, 5, 0.04, 0.02, 0.02, 0.02, 0.01, 0.05, 0.01, 0.01, 0.01, 0.00, 0.05, 0.02, 0.01, 0.01, 0.01, 0.04, 0.02, 0.01, 0.01, 0.01
```

is the Benford-Fourier (BF) feature extracted from the image “Boston_fake_34”, which is stored as a matrix 4 x 5:

```
0.04, 0.02, 0.02, 0.02, 0.01,
0.05, 0.01, 0.01, 0.01, 0.00,
0.05, 0.02, 0.01, 0.01, 0.01,
0.04, 0.02, 0.01, 0.01, 0.01
```

The extracted features are:

1. **adjpg.csv**: probability map of the aligned double JPEG compression. [V2]
2. **nadjpg.csv**: probability map of the non-aligned double JPEG compression. [V2]
3. **sadjpg.csv**: potential primary quantization steps for the first 6 DCT coefficients of the aligned double JPEG compression. [V2]
4. **snadjpg.csv**: potential primary quantization steps for the first 6 DCT coefficients of the non-aligned double JPEG compression. [V2]
5. **BF.csv**: Benford-Fourier coefficients for n=1,2,3,4,5 (column-wise) and for DCT frequencies (2,2) (4,2) (2,4) (4,4) (row-wise). This feature is only extracted from .png images. [V1]
6. **BAG.csv**: Block artifact grid. [V4]
7. **PRNU.csv**: Photo-Response Non-Uniformity (PRNU). [V3]

References

- [V1] C. Pasquini, F. Perez-Gonzalez, G. Boato, "A Benford-Fourier JPEG compression detector," in IEEE ICIP, pp. 5322-5326, 2014.
- [V2] T. Bianchi, A. Piva, "Image forgery localization via block-grained analysis of JPEG artifacts," in IEEE Transactions on Information Forensics and Security, vol. 7, no. 3, June 2012.
- [V3] M. Goljan, J. Fridrich, and M. Chen, "Defending Against Fingerprint-Copy Attack in Sensor-Based Camera Identification," in IEEE Transactions on Information Security and Forensics, vol. 6, no. 1, 227-236, 2010.
- [V4] W. Li, Y. Yuan, and N. Yu, "Passive detection of doctored JPEG image via block artifact grid extraction," ACM Signal Processing, vol. 89, no. 9, 2009, pp. 1821-1829.