

# Clustering Millions of Faces By Identity

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## Clustering Millions of Faces by Identity

The article was written by (Otto, Wang, and Jain 2018). It was cited 44 times according to Google Scholar. The task performed was face clustering. They used the F-measure metric over clusters with distractor images.

### Hypothesis

Deep features clustered using only the top-k nearest neighbors in rank-order clustering will produce a more scalable and a more accurate face clustering algorithm.

The network architecture to produce a 320D feature vector was VGG16 proposed by (Simonyan and Zisserman 2014).

### Evidence and Results

Evidence is presented first over a small dataset and then over an augmented version of the datasets with million of distractor images.

### Dataset

### Results

### Contribution

A first contribution of this paper stems from an improvement of the clustering algorithm. The Rank-Order cluster proposed by (Zhu, Wen, and Sun 2011) has the disadvantage that it requires  $O(n^2)$ . The authors propose to use the FLANN library implementation of the randomized k-d tree algorithm to compute the list of top-k nearest neighbors. Just one iteration is used.

### Weaknesses

### Future Work

### References

- Otto, C., D. Wang, and A. K. Jain (Feb. 2018). “Clustering Millions of Faces by Identity”. In: *IEEE Transactions on Pattern Analysis and Machine Intelligence* 40.2, pp. 289–303. ISSN: 0162-8828. DOI: [10.1109/TPAMI.2017.2679100](https://doi.org/10.1109/TPAMI.2017.2679100).
- Simonyan, Karen and Andrew Zisserman (2014). “Very Deep Convolutional Networks for Large-Scale Image Recognition”. In: pp. 1–14. ISSN: 09505849. DOI: [10.1016/j.infsof.2008.09.005](https://doi.org/10.1016/j.infsof.2008.09.005). arXiv: [1409.1556](https://arxiv.org/abs/1409.1556). URL: <http://arxiv.org/abs/1409.1556>.

Zhu, C., F. Wen, and J. Sun (June 2011). “A rank-order distance based clustering algorithm for face tagging”.  
In: *CVPR 2011*, pp. 481–488. DOI: [10.1109/CVPR.2011.5995680](https://doi.org/10.1109/CVPR.2011.5995680).