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14. Yang L, Luo P, Chen C L, et al. A large-scale car dataset for fine-grained categorization and verification[C]. In Computer Vision and Pattern Recognition (CVPR), 2015:3973-3981.
15. Yang L, Luo P, Chen C L, et al. A large-scale car dataset for fine-grained categorization and verification[C]. In Computer Vision and Pattern Recognition (CVPR), 2015:3973-3981.



16. Dong Z, Wu Y, Pei M, et al. Vehicle Type Classification Using a Semi-supervised Convolutional Neural Network[J]. IEEE Transactions on Intelligent Transportation Systems, 2015, 16(4):2247-2256.

17. Ding S, Lin L, Wang G, et al. Deep feature learning with relative distance comparison for person re-identification[J]. Pattern Recognition, 2015, 48(10):2993-3003.
18. Liu H, Tian Y, Wang Y, et al. Deep Relative Distance Learning: Tell the Difference between Similar Vehicles[C]// Computer Vision and Pattern Recognition. IEEE, 2016:2167-2175.
19. Yu F X, Kumar S, Gong Y, et al. Circulant Binary Embedding[J]. Computer Science, 2014:946-954.
20. Gong Y, Lazebnik S, Gordo A, et al. Iterative Quantization: A Procrustean Approach to Learning Binary Codes for Large-Scale Image Retrieval[J]. IEEE Transactions on Pattern Analysis & Machine Intelligence, 2013, 35(12):2916-2929.
21. Harpeled S, Indyk P, Motwani R. Approximate Nearest Neighbor: Towards Removing the Curse of Dimensionality[J]. Theory of Computing, 2012, 604-613(11):604-613.
22. Wang J, Kumar S, Chang S F. Semi-supervised hashing for scalable image retrieval[C]// IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2010, San Francisco, Ca, Usa, 13-18 June. DBLP, 2010:3424-3431.
23. Berg T, Liu J, Lee S W, et al. Birdsnap:

Large-Scale Fine-Grained Visual Categorization of Birds[C]// Computer Vision and Pattern Recognition. IEEE, 2014:2019-2026.

24. Gong Y, Lazebnik S. Iterative quantization: A procrustean approach to learning binary codes[C]// IEEE Conference on Computer Vision and Pattern Recognition. IEEE Computer Society, 2011:817-824.
25. Jin Z, Li C, Lin Y, et al. Density sensitive hashing.[J]. IEEE Transactions on Cybernetics, 2012, 44(8):1362-1371
26. Weiss Y, Torralba A, Fergus R. Spectral hashing[C]// International Conference on Neural Information Processing Systems. Curran Associates Inc. 2008:1753-1760.



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