SSCQ: Hierarchical Quantization Consistency for Fully Unsupervised Image Retrieval

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https://github.com/cazhang/sscq

Motivations
- Unsupervised image retrieval works without data annotations
- Existing methods using self-supervised learning
- We tackle false negative issue of contrastive loss

Proposed method
- Exploit sub-quantized representations for self-supervised learning
- Leverage consistency to regularize the instance contrastive learning
- With a unified objective, our approach exploits richer self-supervision cues

Contributions
- Propose a hierarchical consistent quantization approach for deep fully unsupervised image retrieval
- Global: improve retrieval performance by exploiting contrastive consistency
- Part: employ neighbor semantic consistency learning in a self-supervised way

Comparison with the State of the Art

Comparison with SOTA deep fully unsupervised methods on CIFAR-10, NUS-WIDE and FLICKR25K in terms of mAP (%).

Coupling part loss with global losses

Qualitative visualizations

Retrieval results of our approach and SPQ [Jang 2021] on CIFAR-10, NUS-WIDE and FLICKR25K in 32 bits. False negative results are denoted in red bounding boxes.