Self-Supervised Feature Learning by Learning to Spot Artifacts
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Project website (code): http://sjenni.github.io/LearningToSpotArtifacts/

Feature Learning

Goal
- Learn image features that transfer well to other tasks (classification, detection)
- Learn without human annotations

Challenges
- Define human annotation-free task (a pseudo-task) that relates to semantics
- Design pseudo-task to avoid trivial learning

Contributions
- We introduce a new self-supervised feature learning framework based on classifying images into real and with artifacts
- A method to create images with non-trivial artifacts based on adversarial training
- Our learnt features achieve state-of-the-art performance in several transfer learning benchmarks

Ablations

Transfer Learning

- Transfer features of the trained AlexNet discriminator via finetuning to VOC2007
- We achieve state of the art results in classification and segmentation

Qualitative Evaluation

Nearest-neighbor retrievals on ImageNet

Feature visualizations

Which image features influence the decision between real and corrupted?

References