Do Convnets Learn Correspondence?

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**Idea**

Convnets have large receptive fields. Do they still learn useful correspondence to their input centers, or is pooling the reason for this?

**Feature Visualization**

Patch replacement by averaging nearest neighbors in feature space.

**Intraclass Alignment**

SIFT Flow with convnet activation features align PASCAL categories, measure quality of keypoint transfer.

**Keypoint Classification**

given image, category, and keypoint location, name the keypoint.

**Keypoint Prediction**

given image, bounding box, and category, predict locations of each keypoint.

**Conclusion**

Despite extensive max pooling and large input regions, convnet activation features retain useful fine local information.