

More image reconstruction examples

Yuting Zhang, Kibok Lee, Honglak Lee

University of Michigan






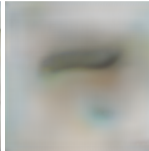






Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.













Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.

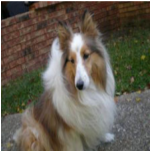
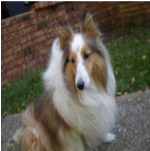
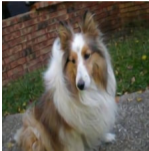
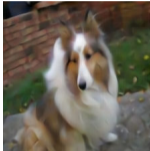
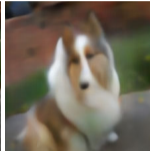
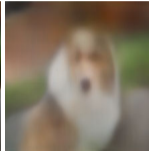
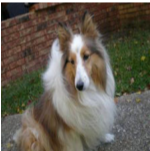
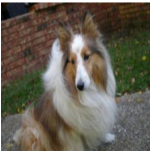
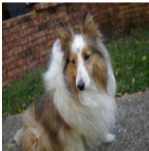
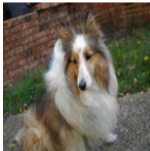
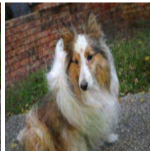
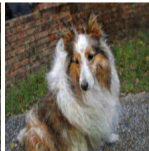
Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.





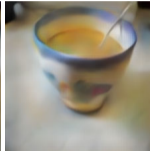
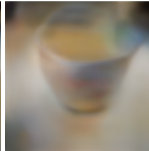






Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.





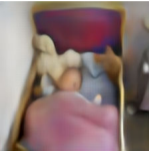

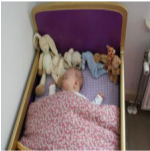





Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.











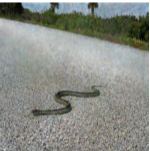

Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.


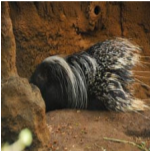


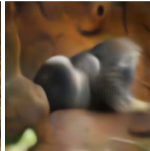
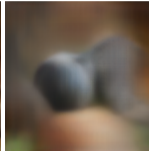
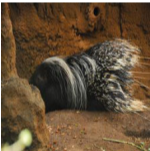
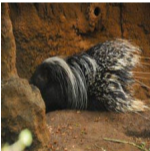

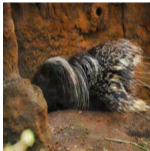
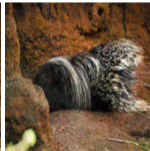

Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.





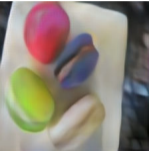







Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.





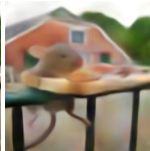





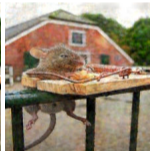
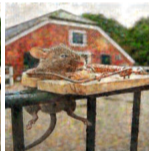
Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.


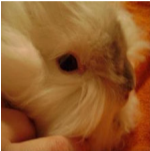
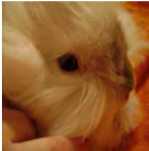
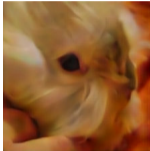

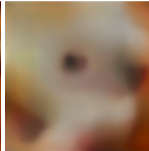
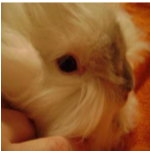
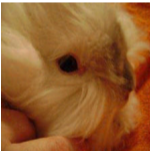


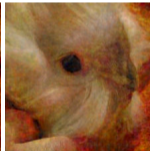

Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.













Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.





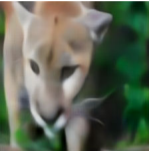







Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.

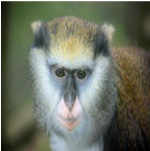
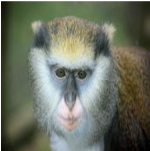
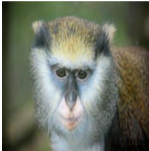
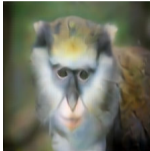
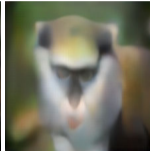
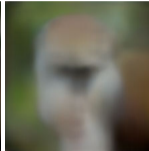
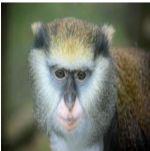
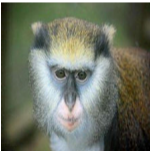
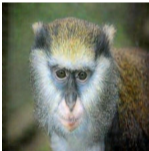
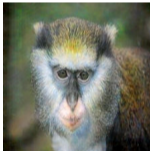
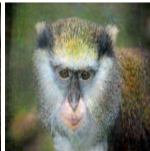
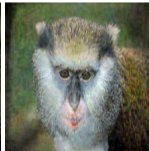
Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.













Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.




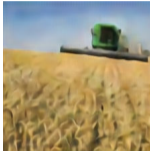
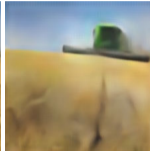
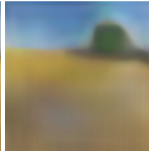






Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.



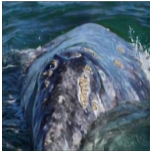

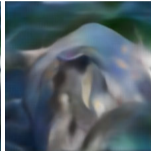
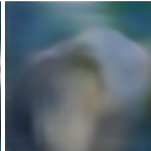
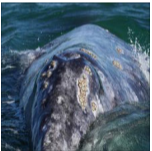
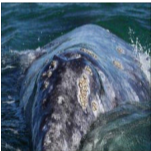
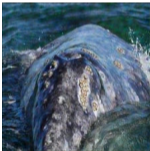
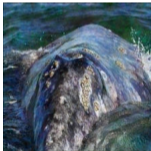
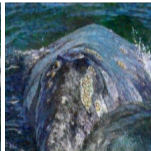
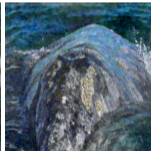
Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.

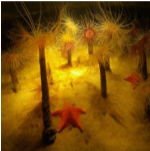



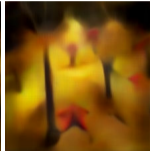
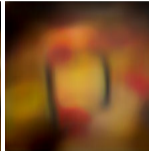


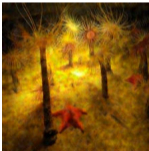
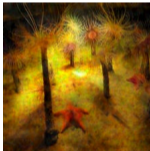
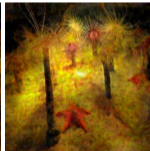
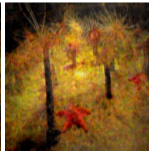
Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.













Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.





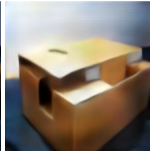
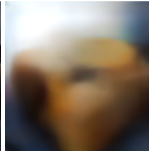




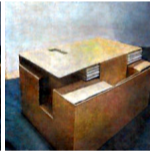

Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.





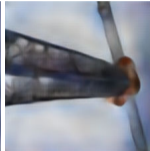
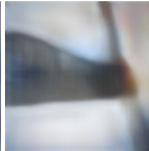




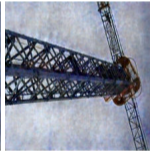
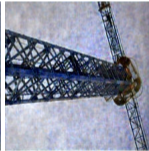
Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.













Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.













Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.













Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.





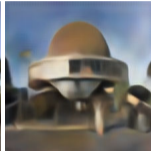
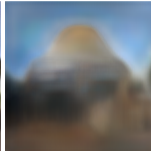






Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.








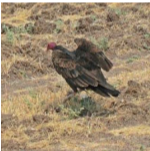

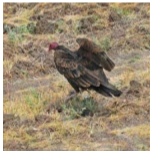


Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.













Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.







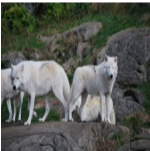
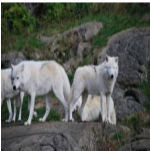




Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.













Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.





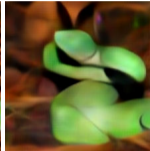
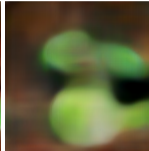






Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.






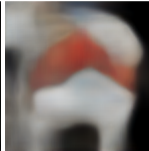






Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.

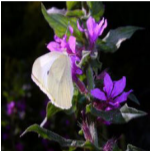



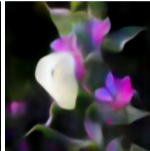
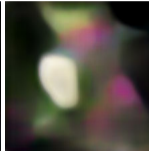




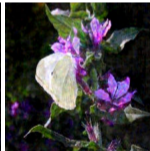
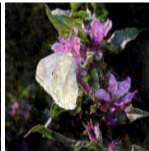
Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.






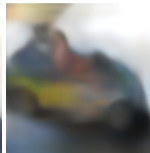






Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.

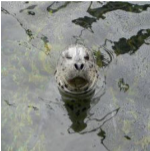
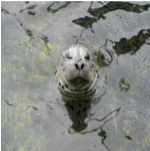



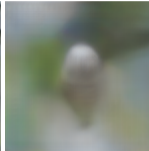
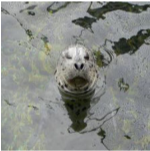


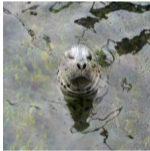


Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.













Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.













Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.













Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.





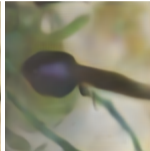




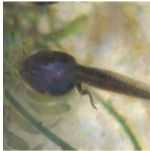
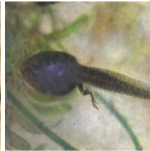
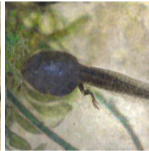
Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.




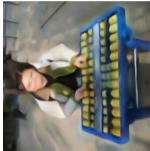
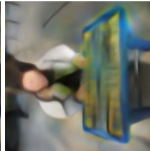
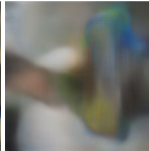




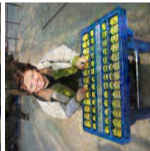
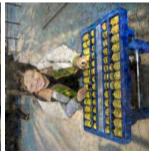
Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.





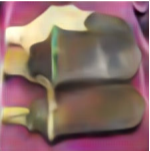







Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.







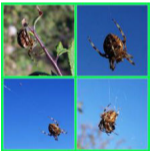
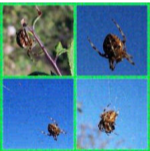

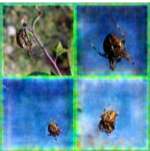
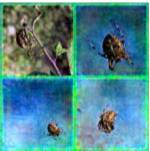
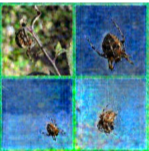
Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.













Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.





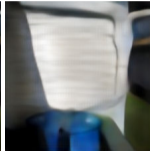
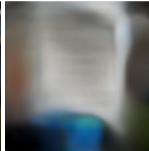






Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.

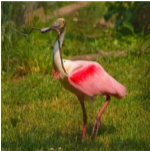


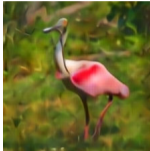
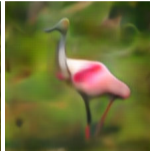
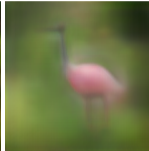
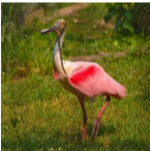
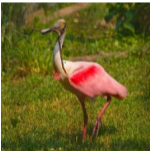
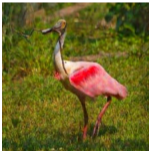
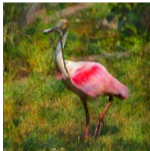


Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.

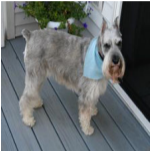
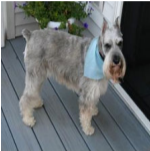


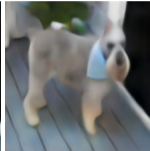
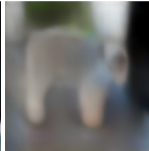
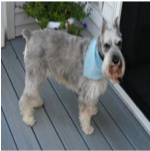
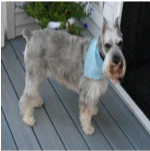
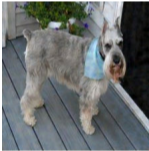
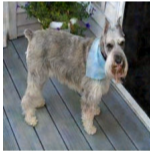
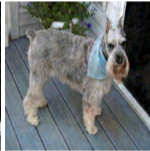

Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.

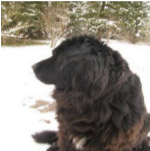
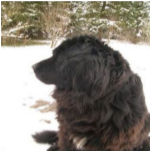


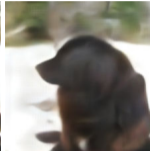
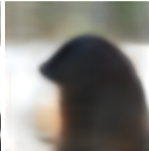






Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.




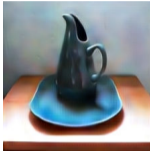
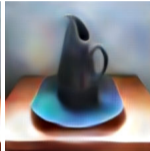
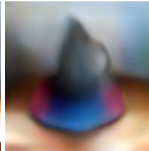






Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.






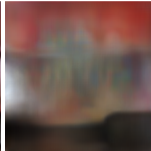

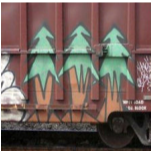
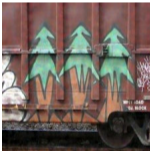
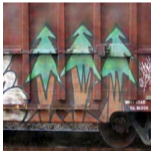


Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.


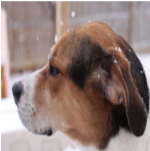

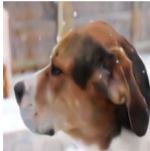
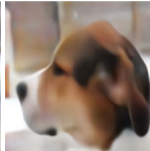
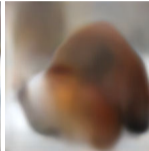






Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.

Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.





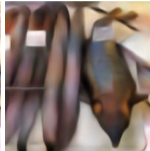
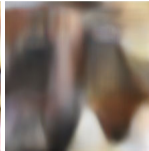






Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.




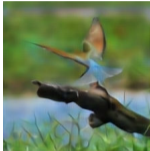
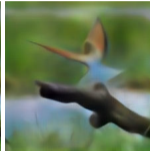







Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.





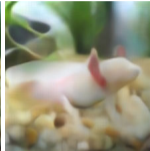
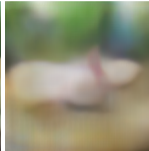






Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.






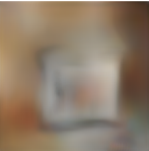


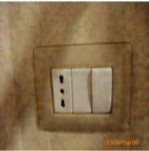
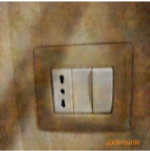


Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.













Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.





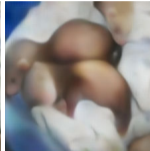
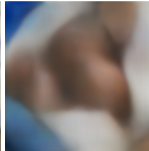






Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.



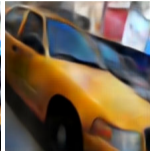
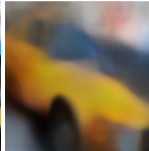

Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.













Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.




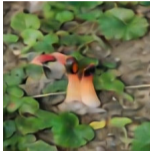
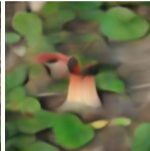
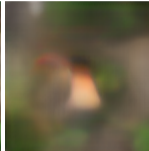




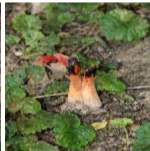

Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.





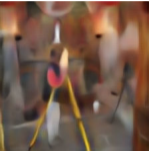







Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.













Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.













Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.


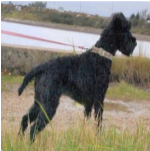

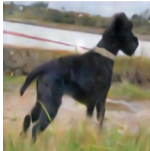





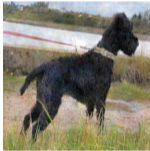


Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.

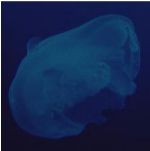
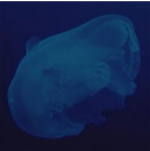

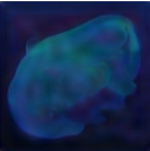
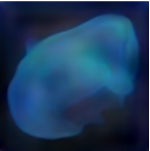
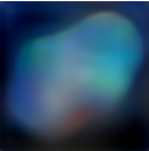

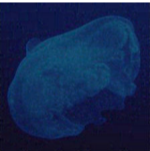
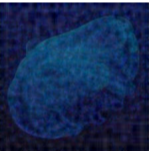
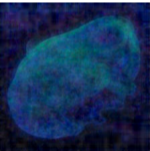
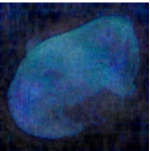
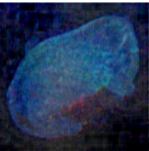
Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.





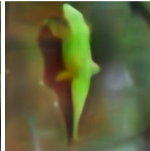
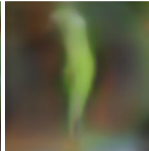



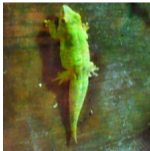
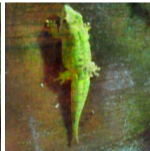

Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.



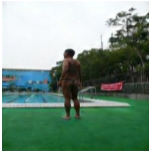
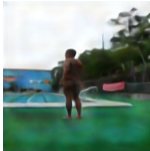
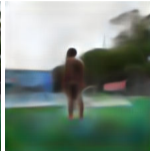
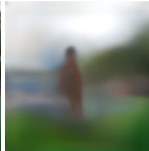



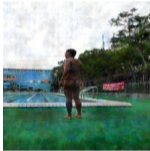
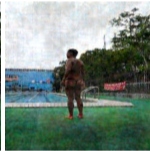
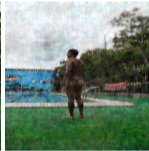
Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.






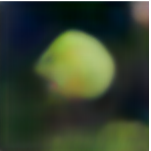




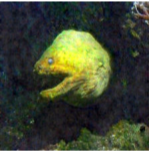

Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.













Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.





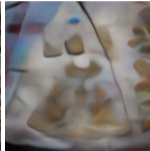
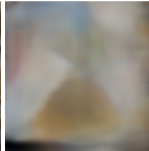






Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.





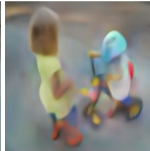
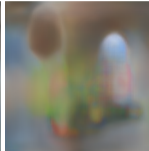






Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.




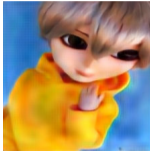
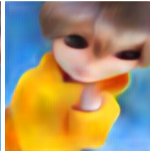
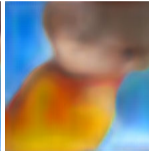



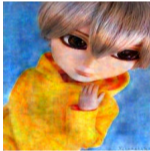
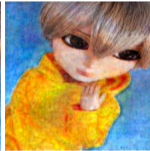

Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.





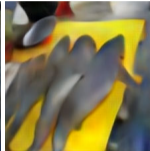
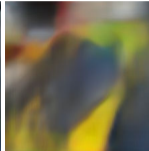






Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.





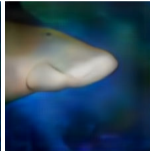
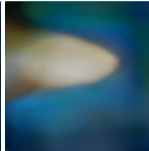






Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.





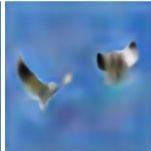
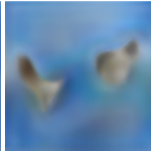






Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.

Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.

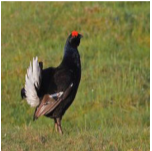



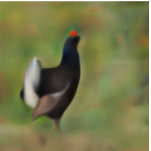
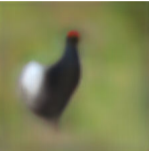
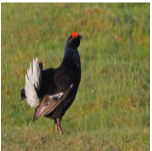
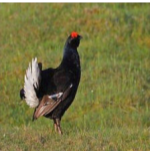
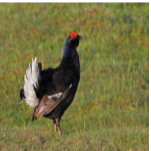
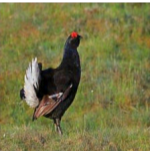
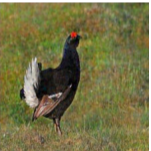
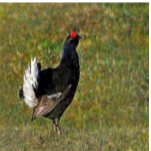
Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.













Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.

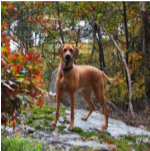
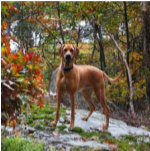

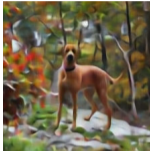
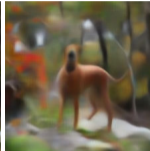
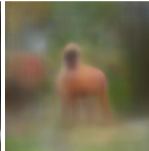
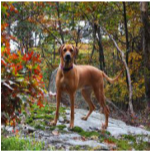
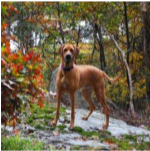

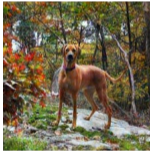


Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.

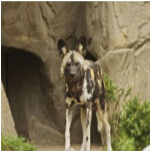
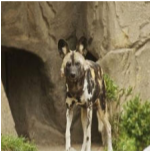
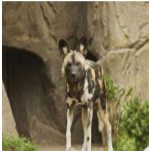
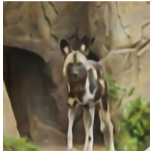
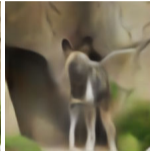
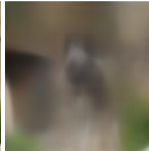
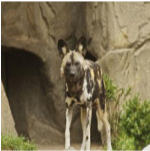
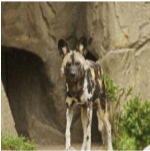
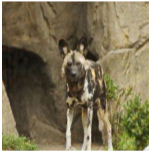

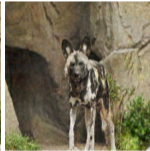

Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.













Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.





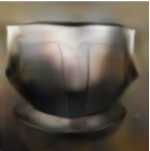







Layer	image	pool1	pool2	pool3	pool4	pool5
SAE						
SWWAE						

Figure: Image reconstruction results from different layers of VGGNet.

Yuting Zhang, Kibok Lee, Honglak Lee, "Augmenting Supervised Neural Networks with Unsupervised Objectives for Large-scale Image Classification", *The 33rd International Conference on Machine Learning (ICML)*, 2016.