Figure 1. Difference between traditional neural network model and deep learning model

1. A traditional neural network
2. A deep neural network

Figure 2. Proposed Model of Multi-scale Conv. + PCA Network. C.L.: Convolution Layer, P.A.L.: Pooling and Activation Layer, Fc.L.: Fully connected Layer, Rfc.L.: Reduced fully connected Layer.

Figure 3. Histogram of low variance hidden nodes. Note that there is a quite large value at 0.

Figure 4. 2D plot of highly correlated nodes. X and Y axes represent the value of different hidden nodes. Each point in the plot represents the density of points in corresponding coordinate.

Figure 5. 2D plot of less correlated nodes. X and Y axes represent the value of different hidden nodes. Each point in the plot represents the density of points in corresponding coordinate.

Figure 6. Confusion Matrix of Recognition Results of CIFAR-10 Dataset. Class number 1: Airplane, 2: Automobile, 3: Bird, 4: Cat, 5: Deer, 6: Dog, 7: Frog, 8: Horse, 9: Ship, 10: Truck.

Figure 7. Sample results of STL-10 dataset. Length of the bar represents the predicted probability. Red corresponds to the correct category. Blue corresponds to false categories.