[T-17] Direct Density Ratio Estimation with Convolution Neural Networks with Application in Outlier Detection

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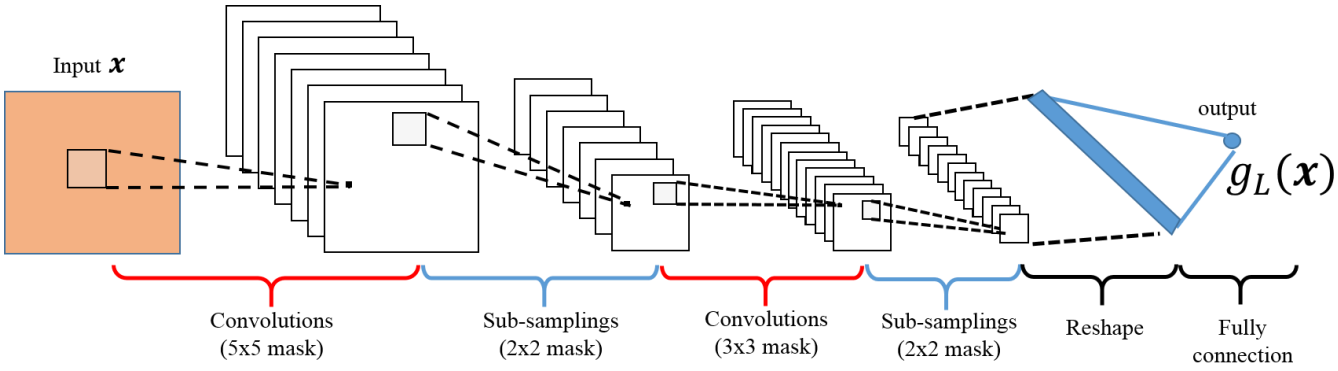
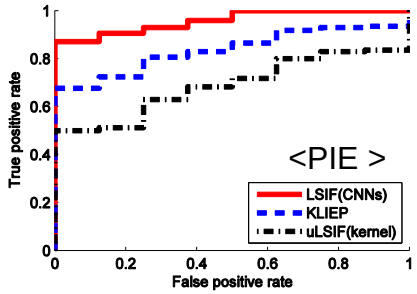
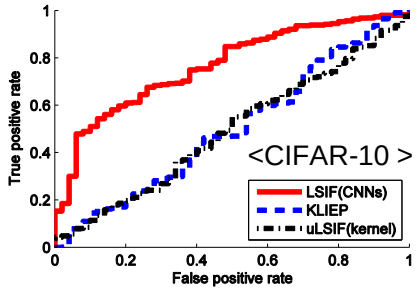
- We propose to use **convolutional neural networks (CNN) in density ratio estimation**

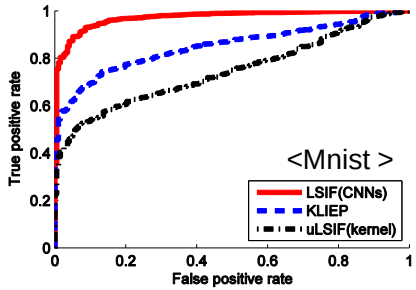
$$\hat{r}(\boldsymbol{x}) = g_L(\boldsymbol{x}) \qquad r(\boldsymbol{x}) = \frac{p_{\mathrm{tr}}(\boldsymbol{x})}{p_{\mathrm{te}}(\boldsymbol{x})}$$



- Proposed method outperforms in **inlier-based outlier detection** experiments.







[ROC curve]