

# PCA thresholding vs RBF parameters

October 14, 2016

## 1 Dataset

CIFAR-10, only first batch: 10000 files for training, 10000 files for testing.  
Reference: **63%** accuracy with plain scattering (translation only),  $\sigma = C = 1$ .

## 2 Method

PCA1:  $x \rightarrow scat^2 \rightarrow PCA_j \rightarrow |\cdot| \rightarrow \phi_J \rightarrow standard \rightarrow SVM$ , J=3, L=8,  
translation only.

## 3 Results

Table 1: PCA epsilon vs RBF

$\epsilon$ ratio	$\sigma$	$C$	accuracy	number of features
0	0.1	0.1		24, 216, 408
		1	12%	
		10		
	1	0.1	60.49%	
		1	64.25%	
		10	<b>69.62%</b>	
	10	0.1		
		1	59.65%	
		10		
0.001	0.1	0.1		16, 30, 37
		1	12%	
		10		
	1	0.1		
		1	62.24%	
		10	<b>66.76%</b>	
	10	0.1		
		1	58.54%	
		10		
0.01	0.1	0.1		8, 9, 9
		1	12%	
		10		
	1	0.1	57.34%	
		1	60.34%	
		10	<b>63.34%</b>	
	10	0.1		
		1	53.83%	
		10		
0.1	0.1	0.1		2, 1, 1
		1	13%	
		10		
	1	0.1	46.64%	
		1	47.56%	
		10	<b>49.33%</b>	
	10	0.1		
		1	38.52%	
		10S		