CSE 847 (Spring 2019): Machine Learning— Homework 5

Xitong Zhang zhangxit@msu.edu

1 K-Means

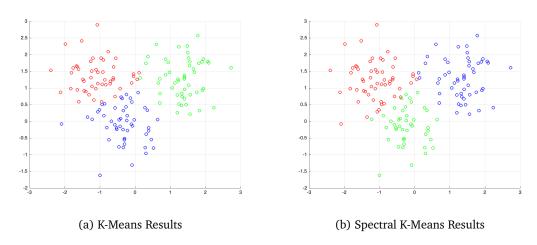


Figure 1: Clustering Visualization

2 PCA



Figure 2: Raw images

Ø	μ		[:]	2	Q.	7		7	O
91	И	Ø	9	K]	G)	[6]	q		(3)
H	(2)	6	k]	•	(4)	(0)	(4)	(0)	9
7	7	θ	П	2	13	9	9	7	2
П	9)	7	H	4	(1)	73	7	Ø	7
9	Θ	(3)	[:]		a	2	q	6	E)
\mathbf{H}	\mathcal{C}	6		Ŋ	[:]		8	9	\mathcal{O}
23		i)	M	7	8	8	(4)	(I)	0
6.	9	8	H	ø		9	(3)	87	П
9	(4)	23	\mathbf{E}	87	E.	76	\mathbf{P}	9	13

(a) 10 Principle Components, MSE: 612.7

(b) 50 Principle Components, MSE: 160.5

0	A		5	2	ų,	7	61	7	0	
G		6	q	K	9	[4]	7		3	
11	5	6	[6]		0	(9)	0	(0)	4	
7	7	0	П	9	8	9	9	ķ	2	
	7)	7	[]	4	0		7/	R	7	
4	8	0			E	N.	9	6		
Н	6	6	7	q	8	0	13		5	
		3	Ķ.	7	3	8		T.	0	
5	9	23	U	S		9		11	H	
7		2		9	3	6	[/]		8	

(a) 10 Principle Components, MSE: 55.9

(b) 50 Principle Components, MSE: 5.4