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BLG527E, Machine Learning, Oct 11, 2013, HW3
Due: October 27, 2013, 22:00 through Ninova or you can put it in my mailbox at the department secretary's office.
Instructors: Zehra Cataltepe (cataltepe@itu.edu.tr), Sinan Sarac (ssarac@itu.edu.tr)
Grading: Please complete the table below according to what you expect to get out of each question. Time spent row will not affect your grade in any way. It is there for me and you to see how much time is spent on what topic.

		Q1					
Grade	Max	5					
	Expected						
Time Spent	Reading& Understanding						
	Coding						
	Running Program						
	Writing Report						

Policy:
You are encouraged to have a group mate for each project. If you prefer, you can do your homework on your own. You and your group mate work together and submit a single report and get the same grade. So, it is crucial that you communicate with each other. **For each homework you should have a different group mate.**
Collaboration in the form of discussions is acceptable, but you should write your own answer/code by yourself (and your group mate). Cheating is highly discouraged for it could mean a zero or negative grade from the homework.
If a question is not clear, please let me know (via email, during office hour or in class).
Unless I indicate otherwise, do not use libraries for machine learning methods. When in doubt, email me.

Each hw will be evaluated on a 0/1 basis.
There will be a total of 11 hws, your top 8 homeworks (each worth 5 points) will be used to compute the 40% of your grade from the course.

In order to be able to take the final exam for BLG527E you have to have a **weighted average score of 30 (over 100) for midterm and homeworks.** Otherwise you will get a VF from the course.

Q1

The accuracy results of 10- fold cross validation.;
V represents validate test. The first part of the 10-fold represented as V = 1, and so on.

Full covariance matrix assumption having Accuracy : 99.13680355741565 results by using CV
V = 1 - Accuracy : 95.28795811518324
V = 2 - Accuracy : 97.64397905759162
V = 3 - Accuracy : 97.12041884816755
V = 4 - Accuracy : 96.60574412532637
V = 5 - Accuracy : 96.8586387434555
V = 6 - Accuracy : 98.95287958115183
V = 7 - Accuracy : 96.8668407310705
V = 8 - Accuracy : 97.38219895287958
V = 9 - Accuracy : 97.90575916230367
V = 10 - Accuracy : 97.65013054830287

Shared diagonal covariance matrix assumption having Accuracy : 75.43813758828145 results by using CV
V = 1 - Accuracy : 67.01570680628272
V = 2 - Accuracy : 78.01047120418848
V = 3 - Accuracy : 75.39267015706807
V = 4 - Accuracy : 69.19060052219321
V = 5 - Accuracy : 67.27748691099477
V = 6 - Accuracy : 78.79581151832461
V = 7 - Accuracy : 70.75718015665797
V = 8 - Accuracy : 70.15706806282722
V = 9 - Accuracy : 77.74869109947645
V = 10 - Accuracy : 74.1514360313316

Confusion Matrix of test data
Rows represent the predicted class and columns represent True class

	C = 0	C = 1	C = 2	C = 3	C = 4	C = 5	C = 6	C = 7	C = 8	C = 9	
C = 0	175	0	0	0	0	0	0	0	0	0	175
C = 1	0	169	2	0	0	0	0	0	0	0	171
C = 2	0	1	167	0	0	0	0	0	0	0	168
C = 3	0	2	1	165	0	0	0	0	0	2	170
C = 4	2	1	0	0	176	1	0	0	0	2	182
C = 5	1	0	0	1	0	176	0	0	0	1	179
C = 6	0	0	0	0	0	0	175	0	0	0	175
C = 7	0	0	0	0	1	0	0	177	0	0	178
C = 8	0	9	5	16	3	2	6	1	172	6	220
C = 9	0	0	2	1	1	3	0	1	2	169	179
	178	182	177	183	181	182	181	179	174	180	