UNLV
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CPE407/ECG607: Biometrics

Spring 2008, 3 credits: Test 2

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PROBLEM 1 : (25 points) Table 1 summarizes data obtained for non-matches and matches with the corresponding scores.

Table 1: Score Distribution

Scores	Non-Matches	Matches
0-5	10	0
5-10	15	0
10-15	15	2
15-20	20	5
20-25	10	15
25-30	2	10
30-35	0	15
35-40	0	5

1. Plot the probability *density* functions for non-match scores $p_n(s)$ and match scores $p_m(s)$.
2. Write the formula for FMR and then compute it from the given data for threshold of 20.
3. Write the formula for FNMR and then compute it from the given data for threshold of 20.
4. Compute and draw the ROC curve from the data.
5. Consider another data set which is similar to the one from table 1 except the line with scores from $15-20$, the values have been replaced by 10 and 10 for match and non-match scores. The same is also done for the line with scores from $20-25$. Using the equal error rate method, find out which set is better.

PROBLEM 2 : (20 points) Consider a database with m entries.

1. Find the probability of a false accept from this database.
2. Find the probability of correct reject.
3. Find the probability of an ambiguous imposter.
4. Find the probability of correct identification.

PROBLEM 3 : (5 points) Explain in a few sentences how rank order statistics are used to compute the list length.

PROBLEM 4 : (5 points) Draw and label an example of a Zephyr chart and explain in one sentence what it is used for.