

ECE-497/BME-491: Applied Biomedical Signal Processing

Homework #5

Due at the beginning of class, February 2, 2007

1) Continue the work you began in *laptop8* by processing all the sinus rhythm and VT data for patients 1-10. Use the correlation coefficient for the template matching. Construct an ROC curve and compute the area under it. Be sure to use the template information in Table 1.

Patient	Left	Right
1	60	20
2	60	10
3	70	10
4	90	15
5	40	60
6	70	10
7	60	0
8	100	0
9	50	0
10	60	10

Table 1: Left and Right (of trigger point) for template selection

2) The program *template_match_remove_jitter.m* is the program used to do the template matching using the correlation coefficient. Modify the code to use one of the alternatives for template matching. Each of you is assigned a different algorithm in Table 2. Be sure to remove the average values from the template and beat segment before applying the algorithm. Process the data for all patients and then construct an ROC curve for your method, including the area under the curve.

a) Only align at the trigger point.

b) Allow a best fit between the template and signal under analysis within 5 samples from the original trigger point. This means you need to change the parameter *delta* to be 5.

Send me your ROC curves (e-mail) so I can compile them. I would prefer you **export** the data using the .eps format if possible. I will compile the results to show to your classmates. *Turn in your code!*

3) Run the mean MSC and scatter diagram analysis programs for at least 4 VF episodes and 4 VT episodes from the data used in homework 1. Use data sample points from 1 to 511. Try at least two different values of *N*. *Turn in your plots*

Name	Algorithms
Chris	hybrid sign
Stephen	modified hybrid sign
Daniel	relative magnitude
Micah	polarity incidence
Rhyse	ADA
Leyland	hybrid sign
Forrest	modified hybrid sign
David	relative magnitude
Geof	ADA
Kara	relative magnitude

Table 2: Algorithm assignment.