Metrics Evaluation Template

Objective

Compare two biometric systems X and Y based on the observation files given on BlazeVIEW. Each observation file has two columns where the first column specifies if it is a genuine comparison (denoted by "1") or an impostor comparison (denoted by "0"). The second column specifies the similarity score for the comparison. You need to evaluate each system based on the metrics we discussed in class. The python program to implement evaluation metrics is also provided on BlazeVIEW.

Questions to be answered

1. What is FMR and FNMR for systems X and Y at 0.5 threshold. Compare the systems based on these error rates and state which system is the best. Justify your answer.
2. What is TMR and TNMR for systems X and Y at 0.5 threshold. Compare the systems based on these positive metrics and state which system is the best. Justify your answer.
3. Find out at which threshold EER occurs for systems X and Y. What is the FMR and FNMR at that EER for each system. Compare the systems based on EER and state which system is the best. Justify your answer.
4. Plot ROC curve and determine AUC for systems X and Y. Compare the systems based on ROC and AUC and state which system is the best (include images of ROC curves in this section). Justify your answer.
5. Plot genuine and impostor match score distributions and determine the D-prime value for systems X and Y. Compare the systems based on D-prime and state which system is the best (include images of match score distributions in this section). Justify your answer.

Formatting Instructions

Create an evaluation document in the following format:

- No plagiarism
- Font style – Times New Roman
- Font size – 12pt (headings – 14pt)
- Line spacing – 1
- Margins – Normal
- Add page number (no limit on the page number)
- Save assignment using the format: CS4990_YourLastName_MetricsEvaluation.docx (Eg: CS4990_Sugathan_MetricsEvaluation.docx)