Natural Computing, Assignment 2

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1 Using the Negative Selection Algorithm

1. The ROC curve for the parameters $n = 10, r = 4$ may be observed in figure 1 as the orange line. The corresponding AUC is 0.7835, which is actually pretty good. The algorithm definitely learned whether the language is English or not.
2. The ROC curves for the parameters $r = 1$ and $r = 9$ are shown in figure 1 as respectively the green and blue line. Changing the length of the substrings (r), we can see some interesting results. If the length is 9, the ROC curve is basically chance. If the length is 1, the TPR and FPR values are almost constant since it just cannot distinguish anything.
3. **TODO:** Which language can be discriminated best?

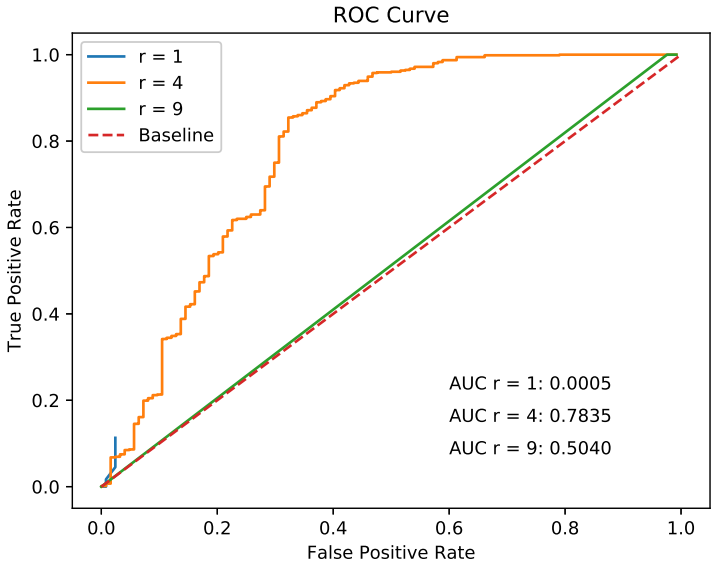

Figure 1: ROC curve for different values of r in the negative selection algorithm

2 Intrusion Detection for Unix Processes

- Detect anomalous sequences in the system calls datasets.

- Do AUC analysis