

### **Final results:**

Algorithm	False negatives	Misclassifies samples	Recall	F2 Score	AUC	Accuracy
SVC	679	4543	0.930079	0.872826	0.814490	79.85%
NN	306	4490	0.968489	0.896859	0.821227	80.08%
KNN	233	5093	0.976007	0.891091	0.798648	77.41%
DT	660	4515	0.932036	0.874493	0.815819	79.97%
RF	296	4796	0.969519	0.892265	0.809430	78.73%
NB	9708	9723	0.000309	0.000386	0.499570	56.87%

### **Conclusions:**

- We can clearly see that for the given problem the accuracy is not a proper metric to measure the model's performance.
- The model with the lowest false negative predictions and highest recall is the KNN. Nonetheless, this algorithm has a pretty high testing complexity, meaning that it may not be suitable for a production-grade live IDS system.
- The Random Forest and Neural Network models present very low false negative predictions while maintaining a low testing complexity. As further work, I would fine-tune both models and try to achieve even better results.
- It is probably worth it to test with a different encoding for the categorical features (e.g. one-hot encoding).