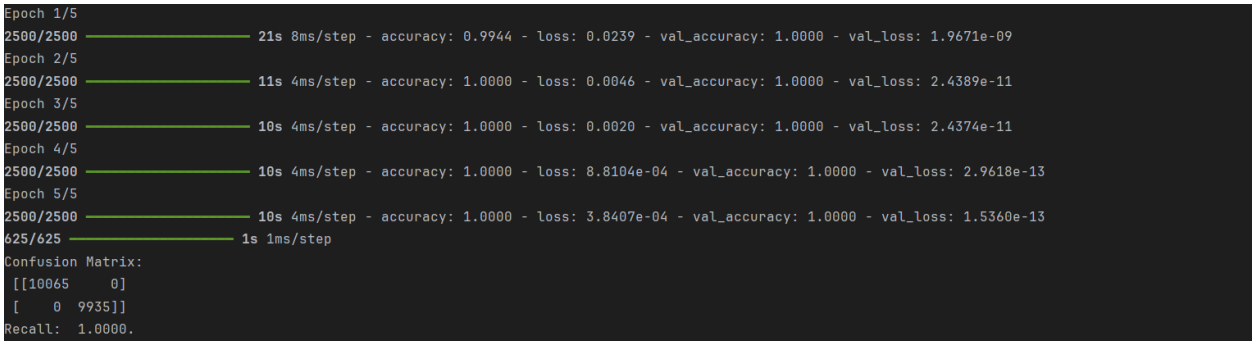
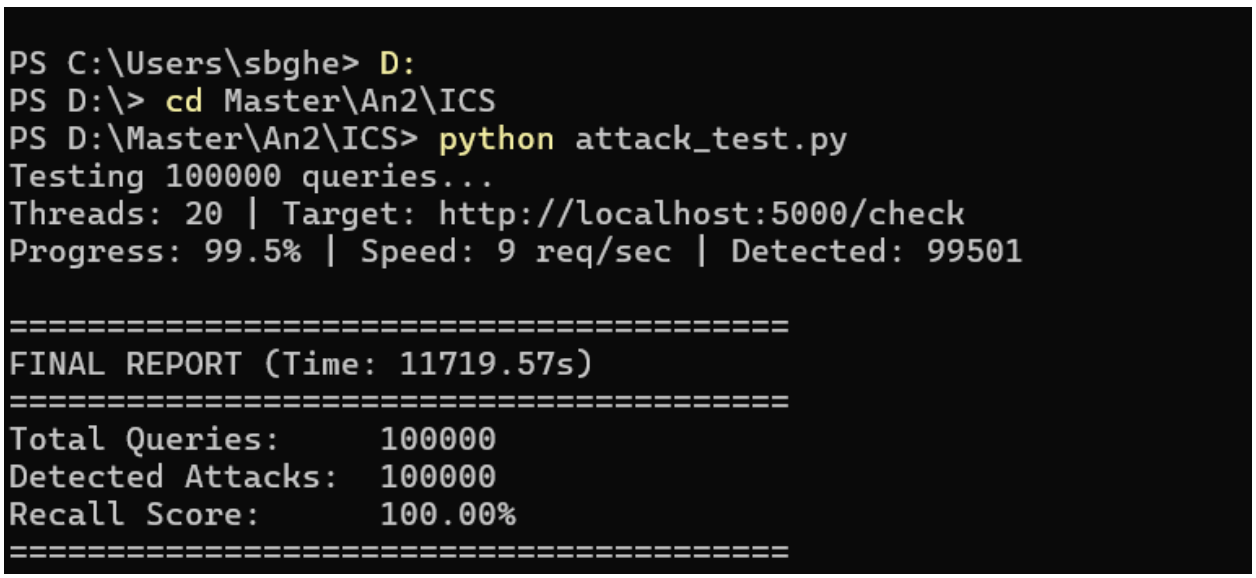
Comparison between CNN and RF
CNN gives me the impression that it really learned and started to think on its own when checking if there is an attack or not, compared with Random Forest.
CNN at some attacks, gives an 100% confidence that it is an attack, while the random forest has the confidence of 70% at the same attack.
This is no overfitting. I tested it with safe queries, where it had the confidence very close to 0 (e^-15) that that is an attack, resulting in returning that is a safe query.
Random forest is showing poorer result when given a new attack, however, both of them had a recall of 100% on training and testing the dataset.

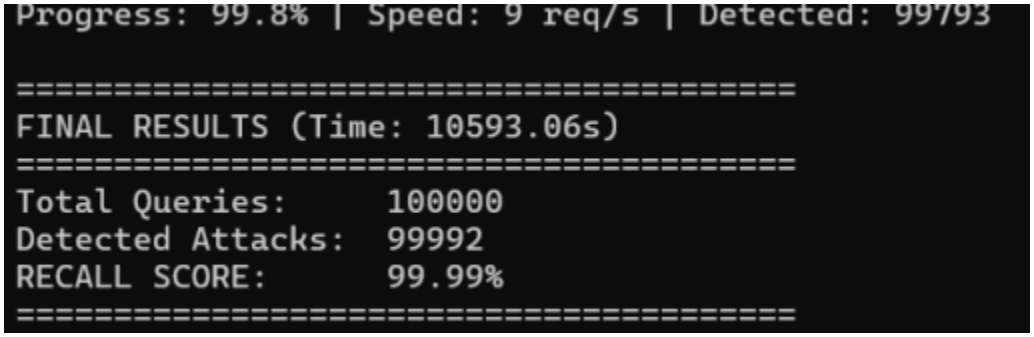
In an edge case, i used the word “supercalifragilisticexpialidocious” to see what their response was. RF was 100% certain this is an attack, showing that it didn't learn much, but merely is relying on memorization . If he doesn't know a word, it just goes into the extreme that that is an attack. The CNN on the other hand, had 95% confidence that this was an attack. This tells me that he thought about it, he doesnt know the word, but because he doesn't know it, he chooses to classify it as an attack. He is also biased toward attack classifiers, because i boosted the attack weight with 1.5.

CNN:



CNN with cleaning:




Testing Querries
CNN:

| Querry | safe/attack | classified |
|---|---|---|
| INSERT INTO books (title) VALUES ('The Union of Select Few') SELECT * FROM products WHERE description = 'This supports 1=1 connection' UPDATE settings SET val = 'Do not forget to /* comment */ your code' SEARCH 'admin' | safe | safe |
| OR '500'='500 | attack | attack |
| OR 1=1 /* | attack | attack |
| admin' \|\| '1 | attack | attack |
| ' UNION SELECT 1 | attack | attack |
| ' un%69on se%6cect 1 | atttack | attack |
| SE%20LECT * FROM use%72s | attack | attack |
| UPDATE calculator SET result = 100 WHERE formula = '10*10=100' | safe | safe |
| 'SELECT * FROM products WHERE description LIKE '%0x%'' | safe | safe |
| supercalifragilisticexpialidocious | safe | attack |

Random Forest

```
Accuracy: 1.0000
Recall:   1.0000
Confusion Matrix:
[[10065     0]
 [    0  9935]]
```

| Querry | safe/attack | classified |
|---|---|---|
| INSERT INTO books (title) VALUES ('The Union of Select Few') SELECT * FROM products WHERE description = 'This supports 1=1 connection' UPDATE settings SET val = 'Do not forget to /* comment */ your code' SEARCH 'admin' | safe | safe |
| OR '500'='500 | attack | attack |
| OR 1=1 /* | attack | attack |
| admin' \|\| '1 | attack | attack |
| ' UNION SELECT 1 | attack | Attack (coff 0.6) |
| ' un%69on se%6cect 1 | atttack | attack |
| SE%20LECT * FROM use%72s | attack | attack(0.7) |
| UPDATE calculator SET result = 100 WHERE formula = '10*10=100' | safe | attack(0.5) |
| supercalifragilisticexpialidocious | safe | attack |