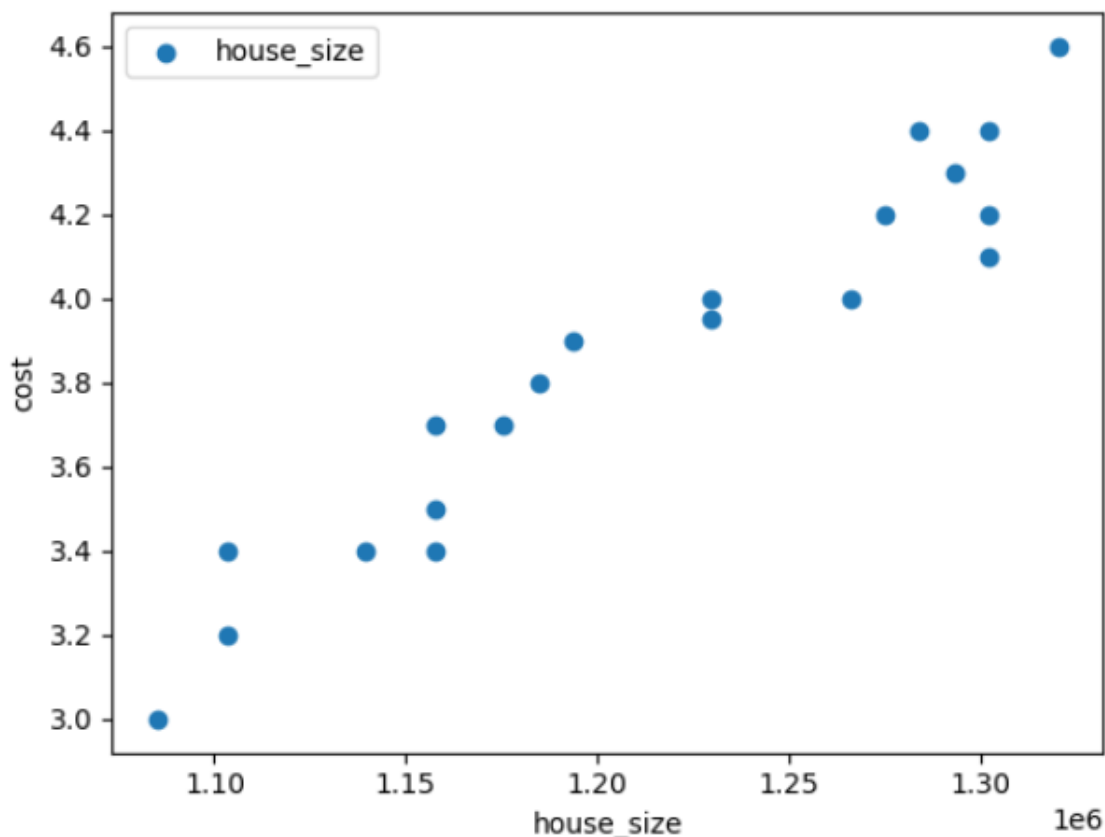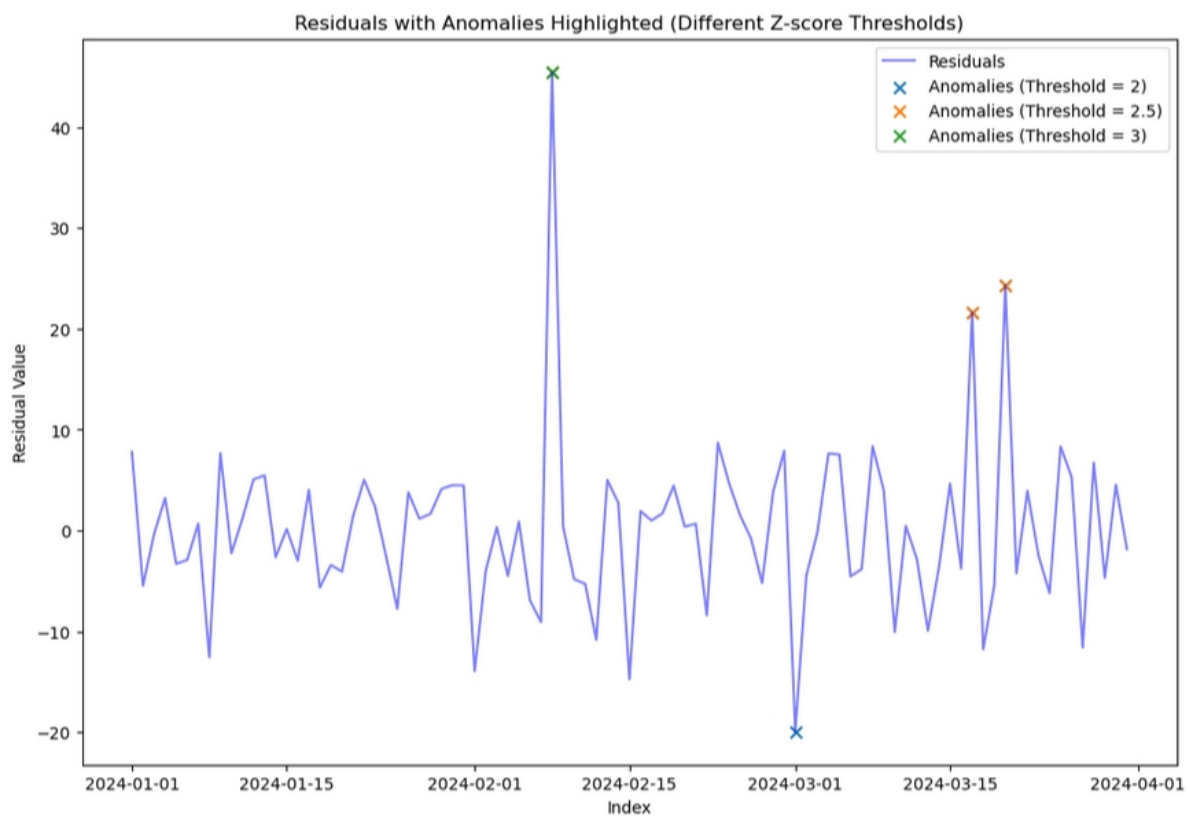# LAB Logbook

Lab 1

- **Series**: A Pandas Series is a one-dimensional array-like object that can hold any data type and has an associated index for easy labelling and access.

- **DataFrame**: A DataFrame is a two-dimensional, tabular data structure with rows and columns, making it ideal for storing and manipulating datasets.
- **Index**: An Index in Pandas is an immutable array used for labelling and aligning data in Series or DataFrames, enabling efficient data retrieval and manipulation.
- **Categorical**: The Categorical type in Pandas allows for efficient storage and manipulation of data with a fixed number of possible values, making it ideal for handling categorical data.
- **DatetimeIndex**: A DatetimeIndex is a specialised index in Pandas for handling time series data, allowing for fast date-based indexing and resampling operations.
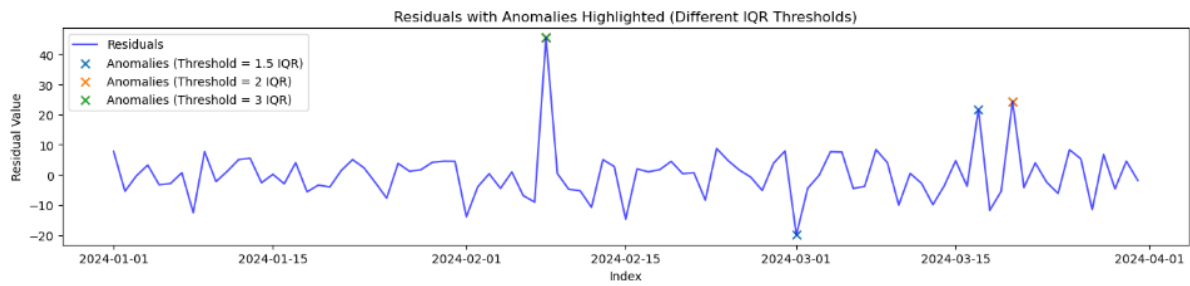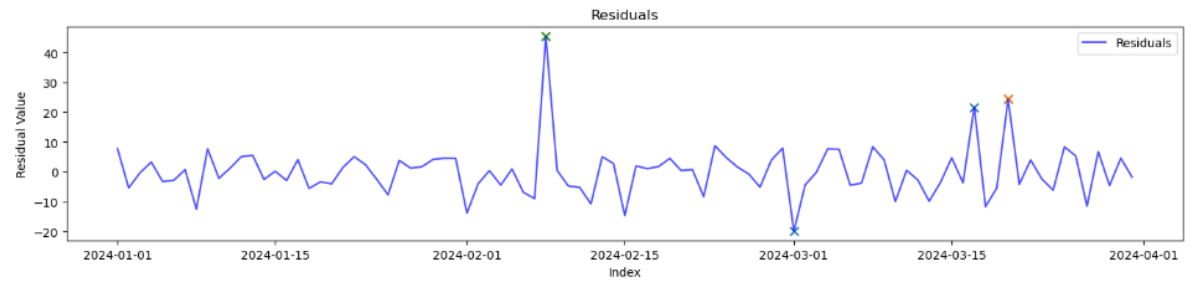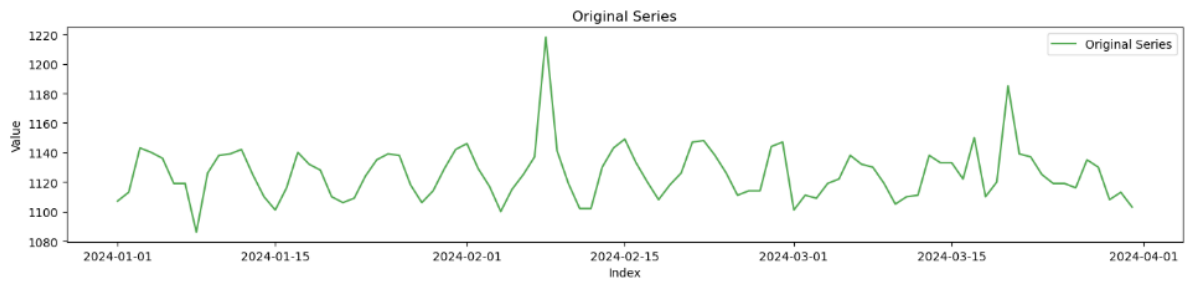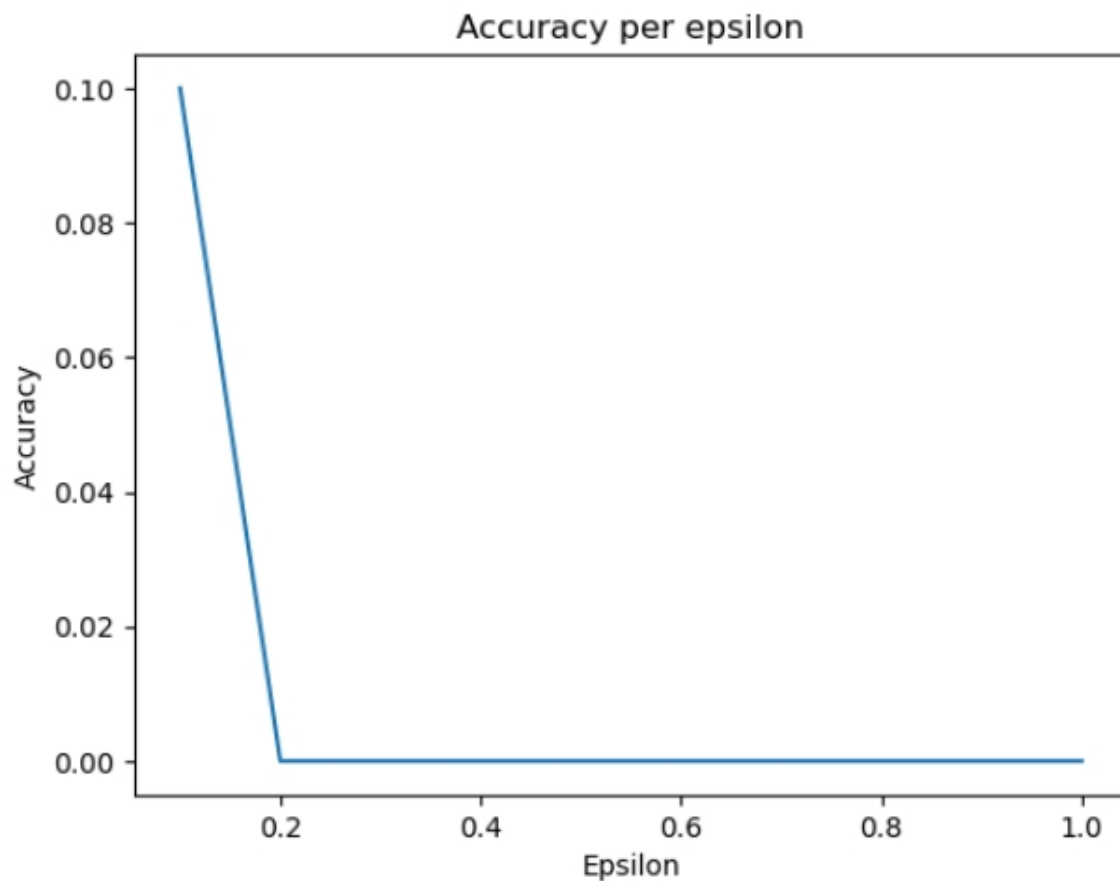
Lab 2

Price guess for size of SID*0.75 = 4.9

Lab 3

Residuals with Anomalies Highlighted (Different Z-score Thresholds)

Original Series

Residuals

Residuals with Anomalies Highlighted (Different IQR Thresholds)

Lab 4

Accuracy per epsilon

The higher the epsilon value, the less accuracy there is. The model is very weak against adversarial attacks.

```
313/313 ──────────────── 1s 4ms/step - accuracy: 0.9769 - loss: 0.1016
Test Accuracy Original: 0.9798
```
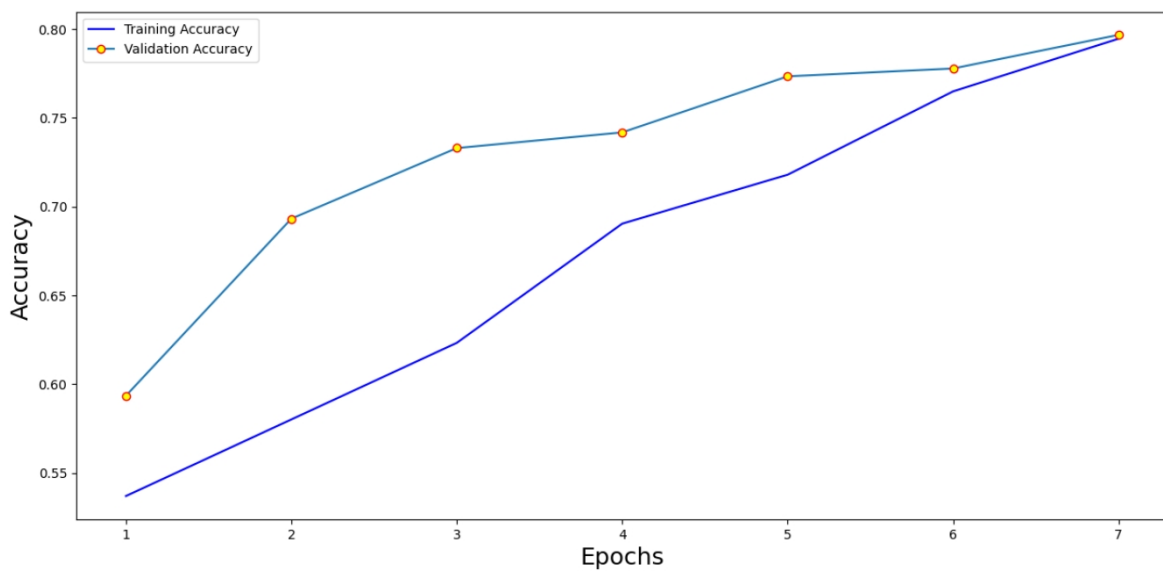
```
313/313 ──────────────── 1s 4ms/step - accuracy: 0.1027 - loss: 123255.7109
Test Accuracy poisoned: 0.1028
```
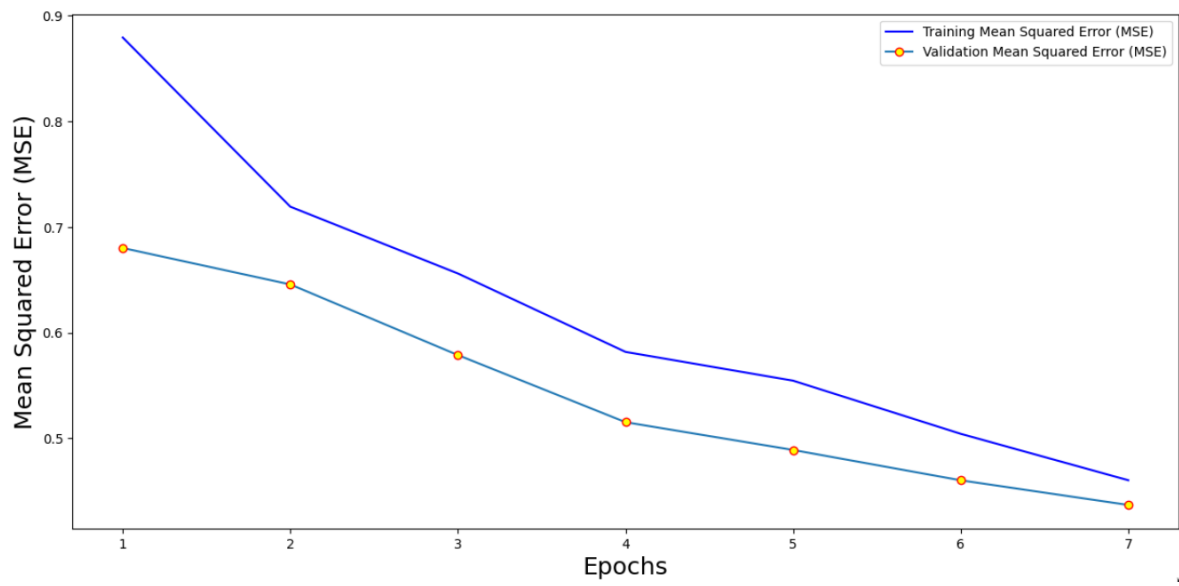
Lab 5

Time for epoch 31 is 11.749621391296387 sec

Lab 6

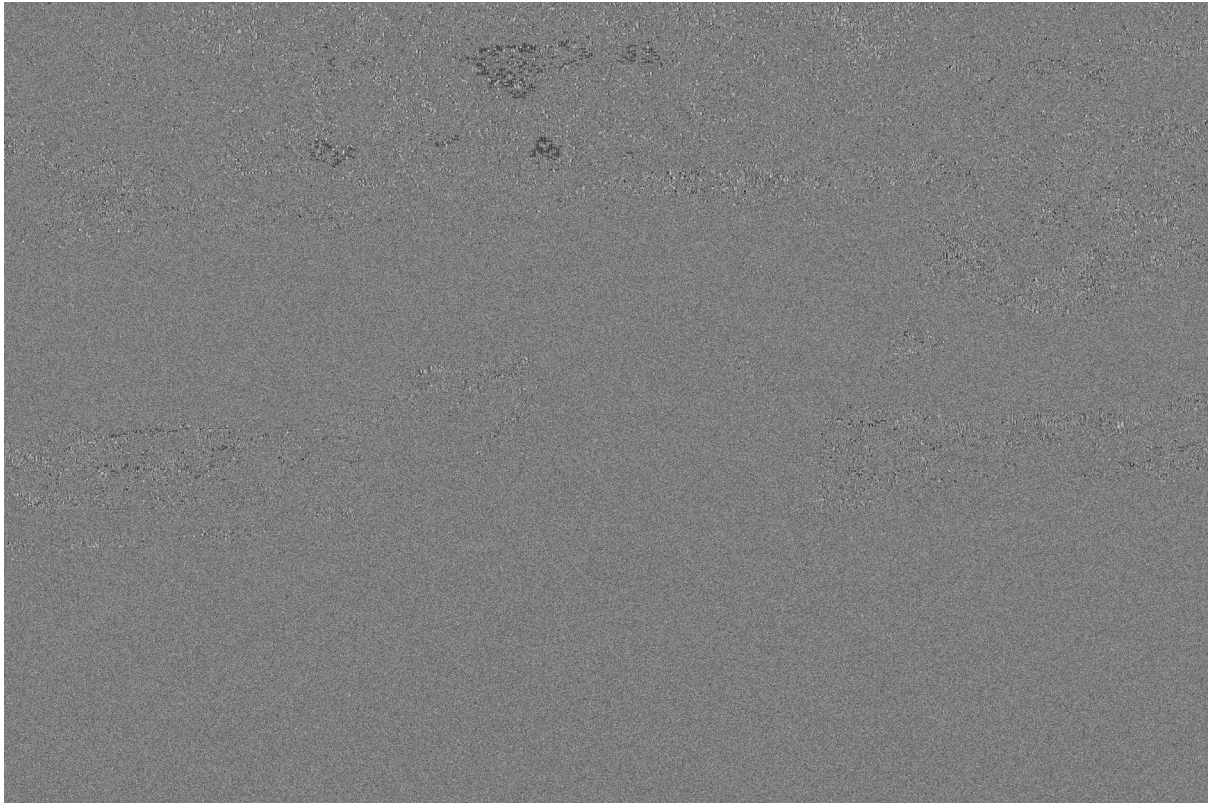# Lab 7

DES

```
Enter the key (8 bytes):  SecretKe
<class 'bytes'>
Enter the text to encrypt:  HelloCrypto
Encrypted text: HQqgsqSEljgBPH7L4con0w==
Decrypted text: HelloCrypto
```

AES

```
Enter the key (24 bytes):  ffffffffffhhhhhhhhhhjjjj
Enter the text to encrypt:  adsfadfs
<class 'str'>
AES Encrypted: JIBUfy1kUpQWa4Tdavd7Ow==
AES Decrypted: adsfadfs
```

3. Explain in one word - 'YES' or 'NO' whether your encryption method for the images is good.

YES

Lab 8

Maher Salimboev

p = 23

g = 5

s = 2

privatekey = 15

Lab 9

1. The attack type you have chosen

   Log4j Vulnerability Exploit (2021) – A critical flaw in Log4j allowed remote code execution across various systems.

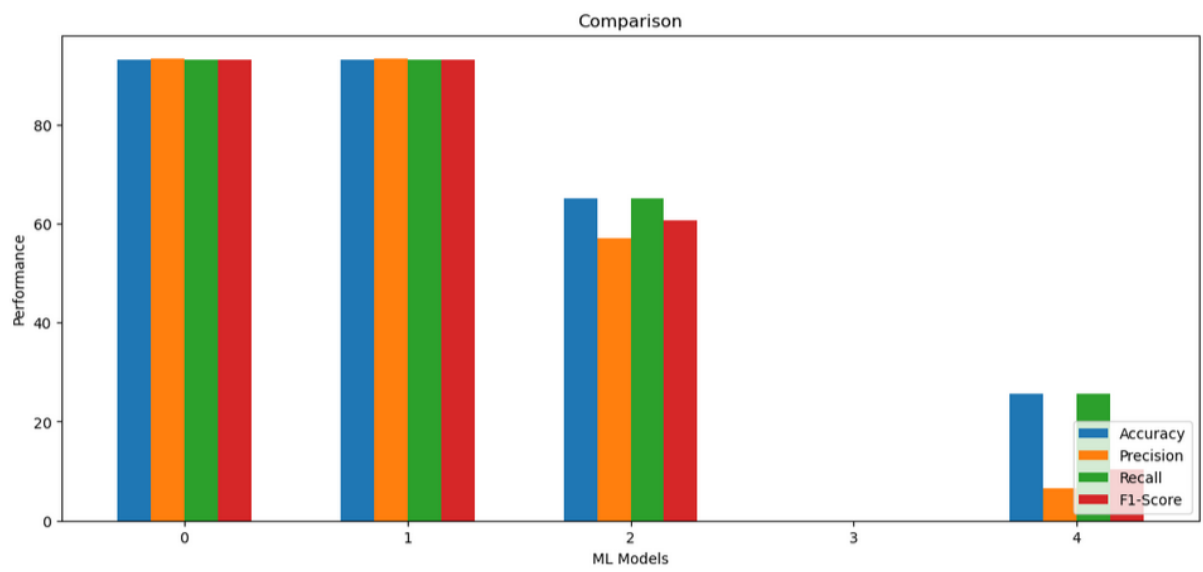2. Any one key website or research paper link that you found was useful.

   https://builtin.com/articles/log4j-vulerability-explained

Lab 10

	AI Models	Accuracy	Precision	Recall	F1-Score	AUC
0	rf	99.7	99.7	99.7	99.7	99.81
1	gb	99.7	99.7	99.7	99.7	99.81
2	svm	99.4	99.4	99.4	99.4	99.03
3	nn	99.8	99.8	99.8	99.8	99.68
4	lstm	99.4	99.4	99.4	99.4	99.23
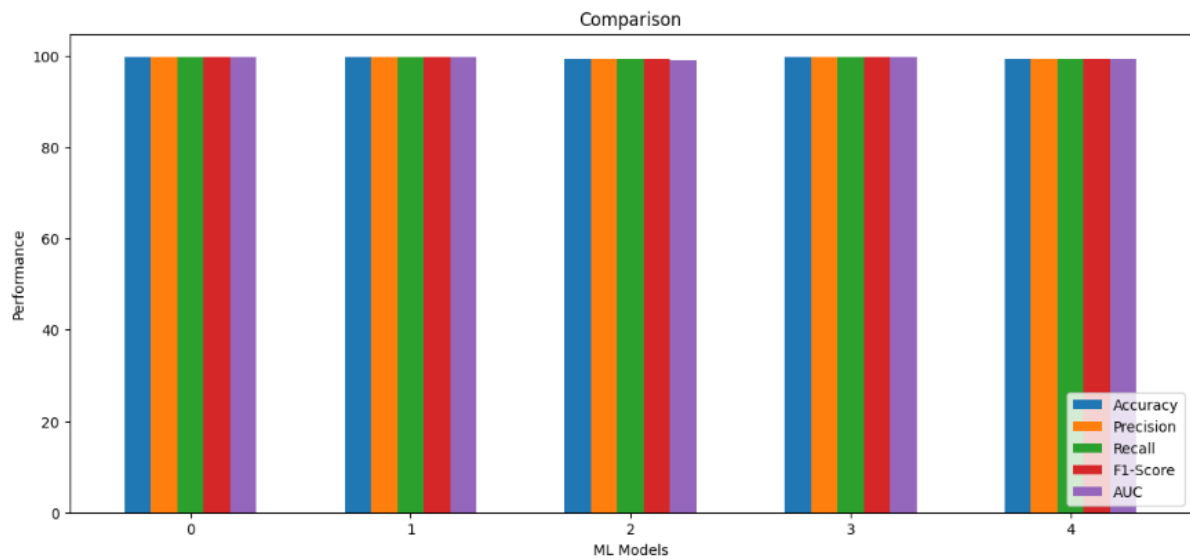
Lab 11

	AI Models	Accuracy	Precision	Recall	F1-Score
0	rf	93.02	93.32	93.02	93.11
1	gb	93.02	93.32	93.02	93.11
2	svm	65.12	57.00	65.12	60.68
3	nn	0.00	0.00	0.00	0.00
4	lstm	25.58	6.54	25.58	10.42

Comparison

Lab 12