Project School Certificate

Title : FALSE DATA INJECTION ATTACK

Faculty Incharge : Raju

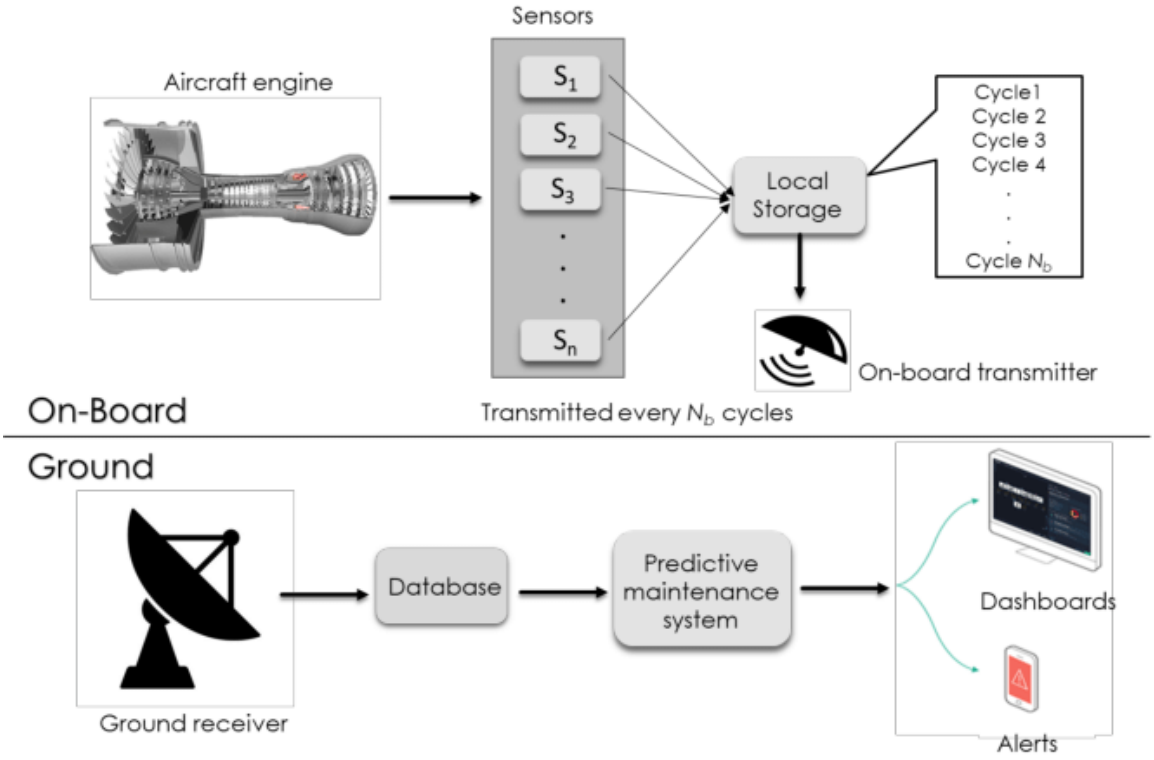
Session Duration : 10/09/2022 – 23/12/2022

Name : G.saidatta

Roll Number : 20BD1A050Q

Class : CSE-A

Signature of faculty **Signature of student**



Domain : deep learning, false data injection attack, LSTM,GRU, CNN, industry 4.0, Internet of things, machine learning.

Project Description : False Data Injection encompasses a class of malicious data attacks that target critical infrastructures controlled by Cyber-Physical Information Systems. FDIA strategies involve the attacker compromising sensor readings, so undetected corrupt data is included in calculating values and variables used to define the system state.

Technical Description :

1. we use three state-of-the-art DL algorithms, specifically, Long Short-Term Memory (LSTM), Gated Recurrent Unit (GRU), and Convolutional Neural Network (CNN) for predicting the Remaining Useful Life (RUL) of a turbofan engine using NASA's C-MAPSS dataset.

2. The obtained results show that the GRU-based PdM model outperforms some of the recent literature on RUL prediction using the C-MAPSS dataset.

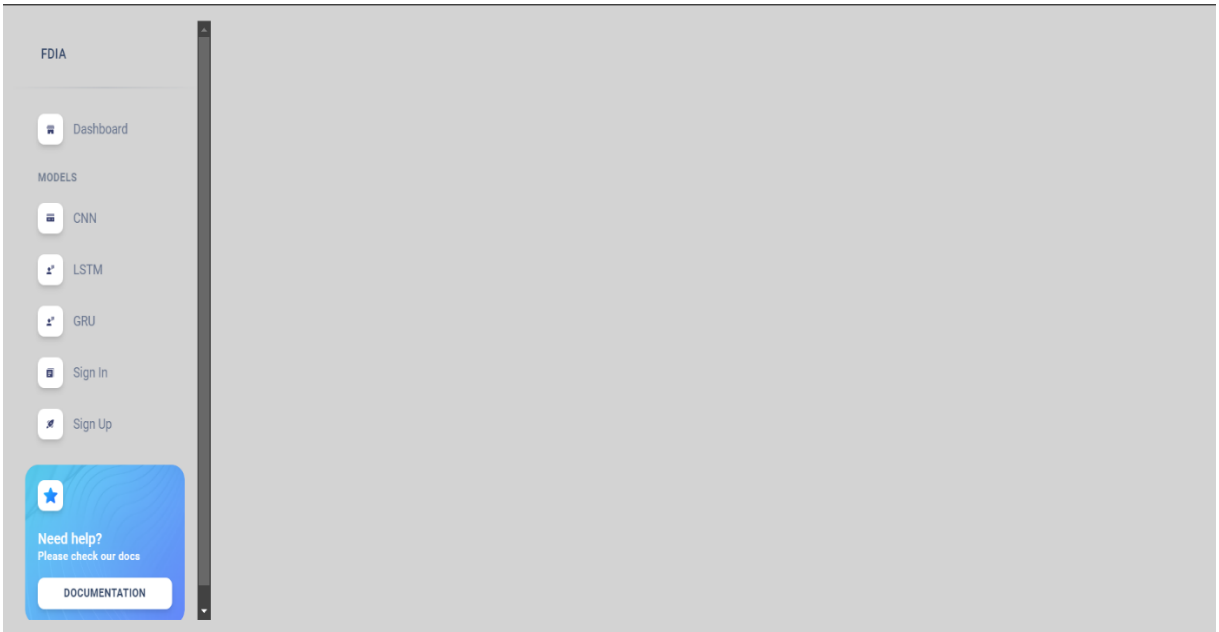
3. Afterward, we model two different types of false data injection attacks (FDIA) on turbofan engine sensor data and evaluate their impact on CNN, LSTM, and GRU-based PdM systems.

4. The obtained results demonstrate that FDI attacks on even a few IoT sensors can strongly defect the RUL prediction.

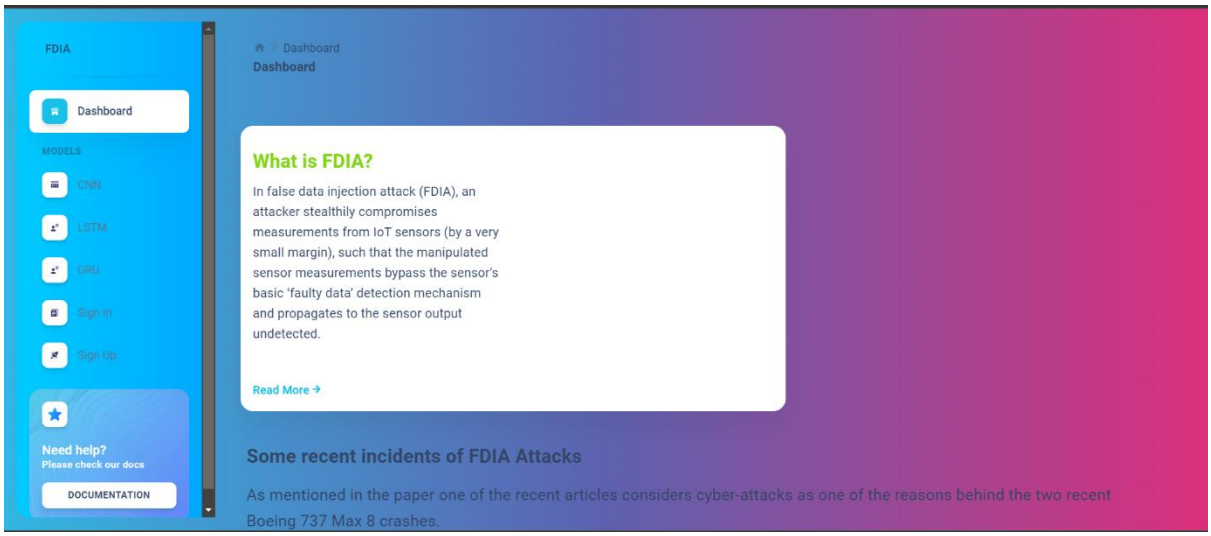
5. Our experiments reveal an interesting relationship between the accuracy, resiliency and sequence length for the GRU-based PdM models.

Implementation

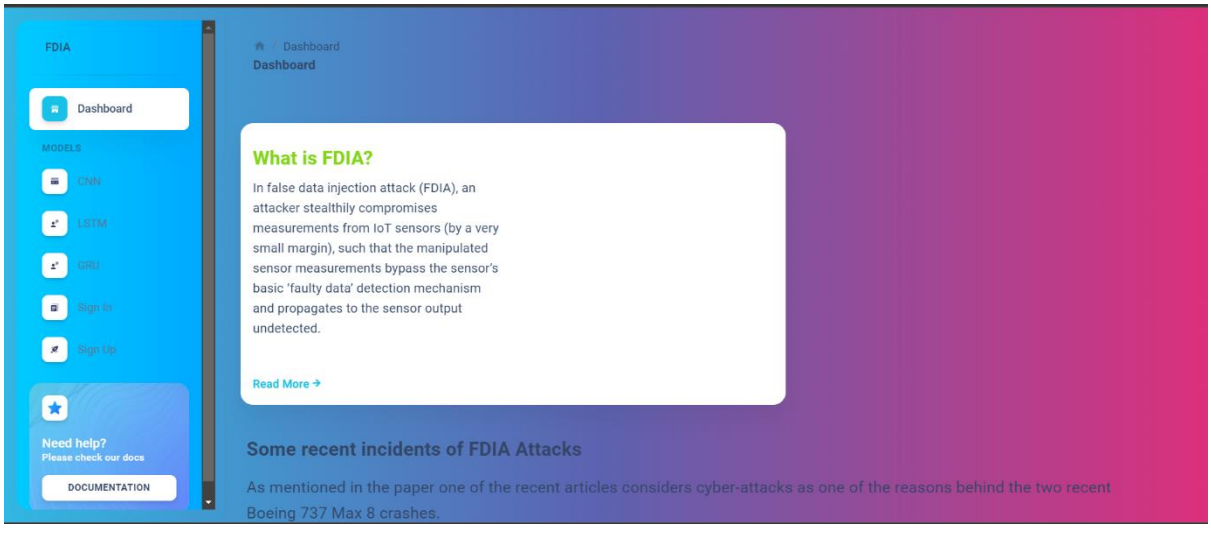
1 **. Home Screen :** Starting page of the web app look as follows :



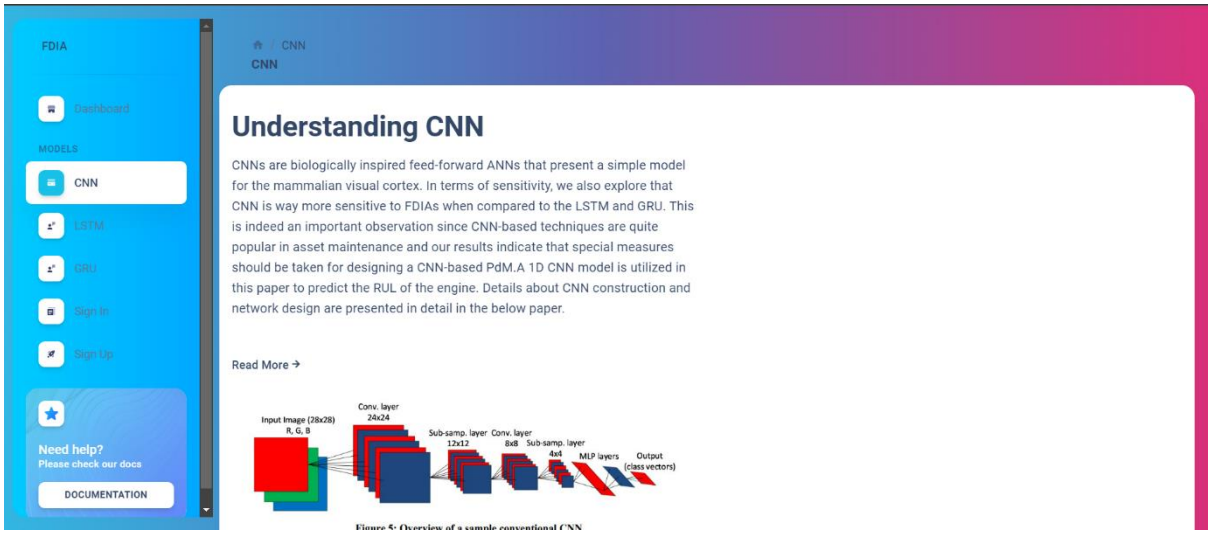
2 . **Dashboard :**it describes what is FDIA and some exmaples of fdia and a refernce paper..



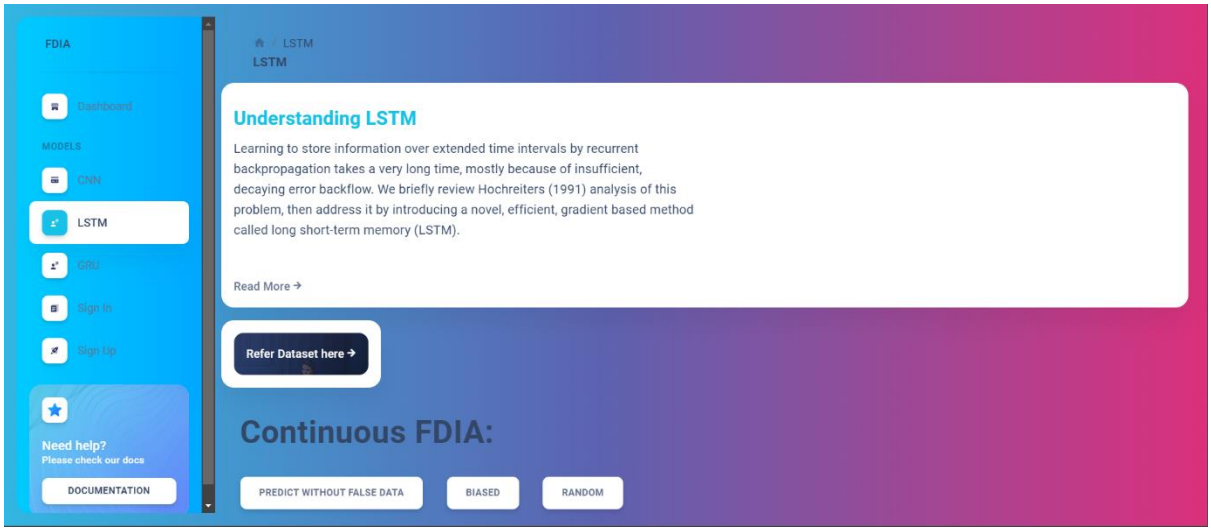
3 .**Models:** we see what type of models are like CNN,LSTM,GRU.



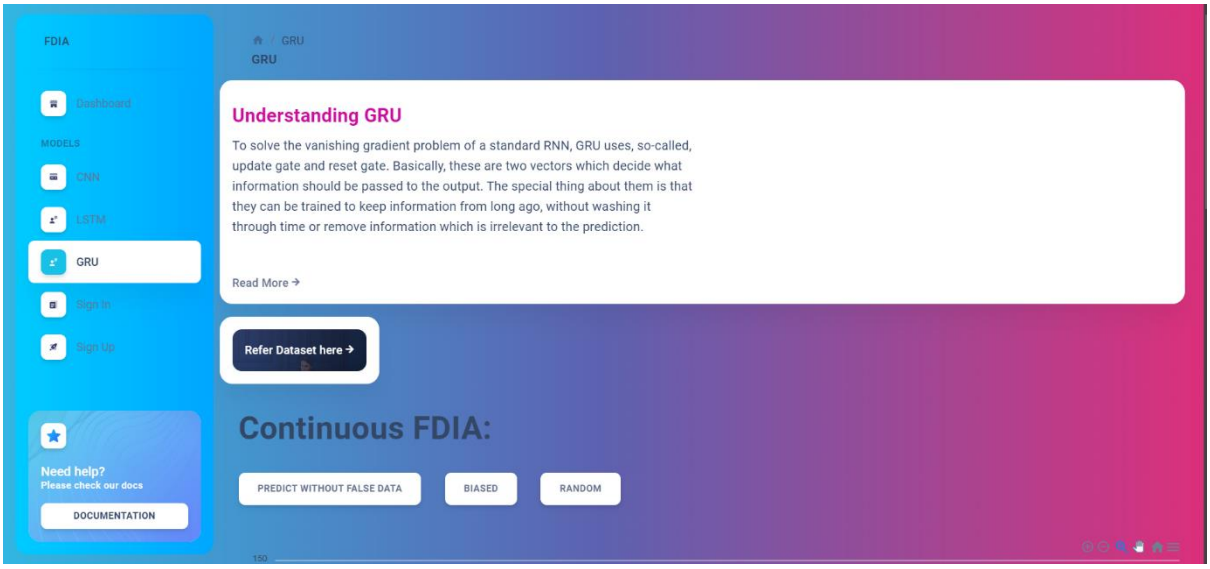
4 . **CNN :** User need to insert a image of leaf captured here to get to know about the disease of that particular leaf.



5 . **LSTM:**



GRU :



CNN with Prediction graph :

→ **truth - Blue - true value**

→ **predict - Green - without false data**

→ **biased - Yellow - with False Data**

→ **random - Red - with false data**

LSTM with Predicted Graph:

→ **truth - Blue - true value**

→ **predict - Green - without false data**

→ **biased - Yellow - with False Data**

→ **random - Red - with false data**

GRU with Predicted Graph:

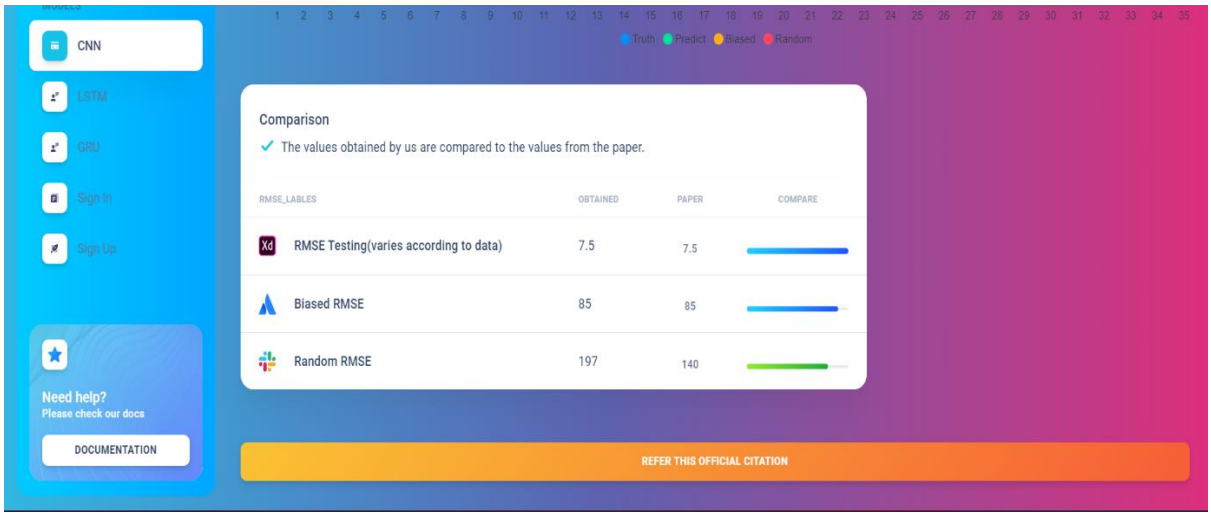
→ **truth - Blue - true value**

→ **predict - Green - without false data**

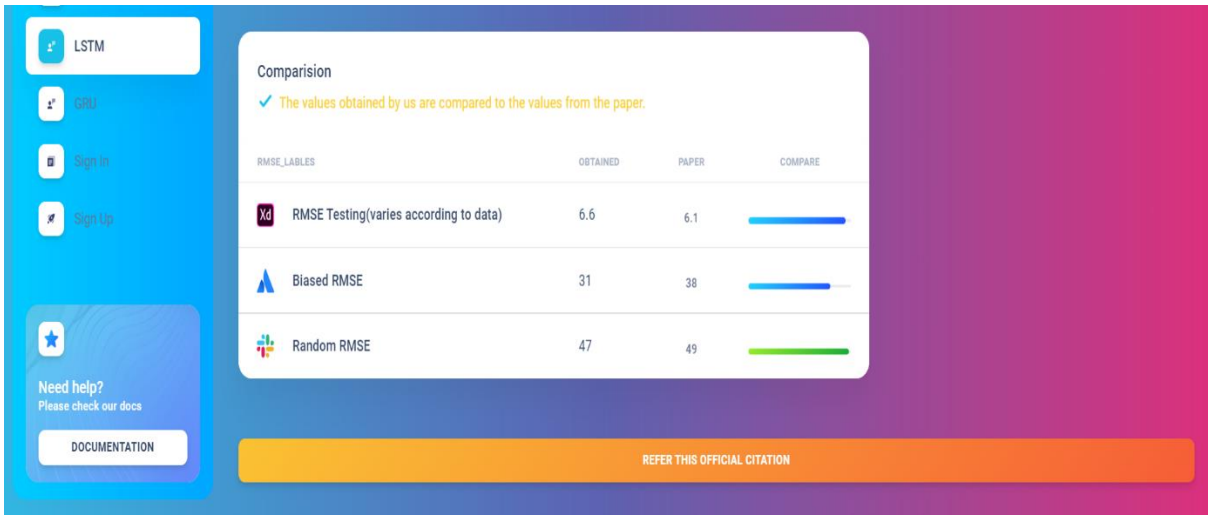
→ **biased - Yellow - with False Data**

→ **random - Red - with false data**

CNN Comparison table :

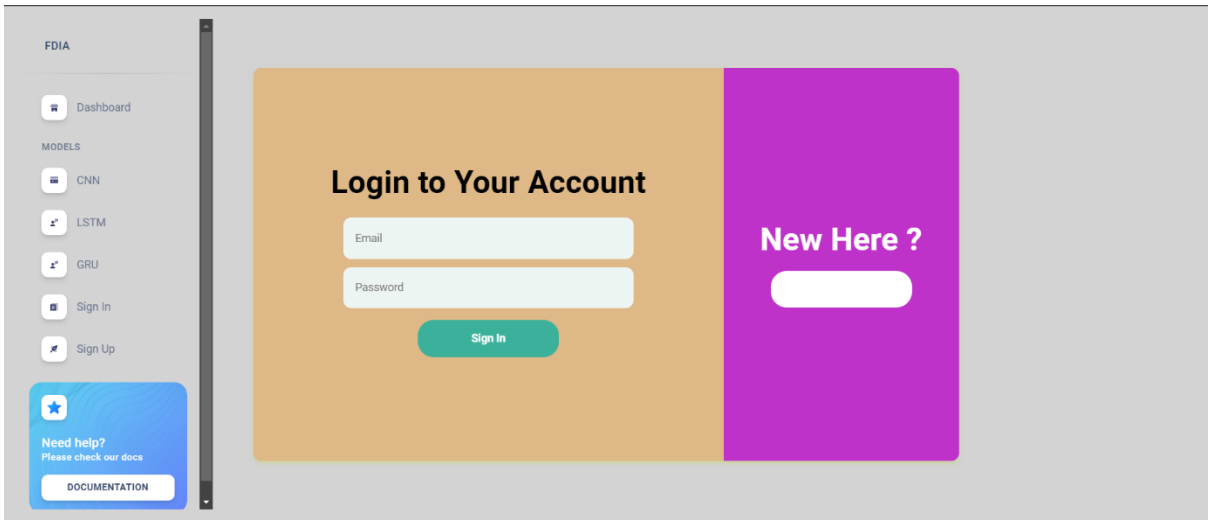


LSTM Comparison Table:



GRU Comparison Table:

Sign in: Given an access to login



Sign out: Given an access to create account data .