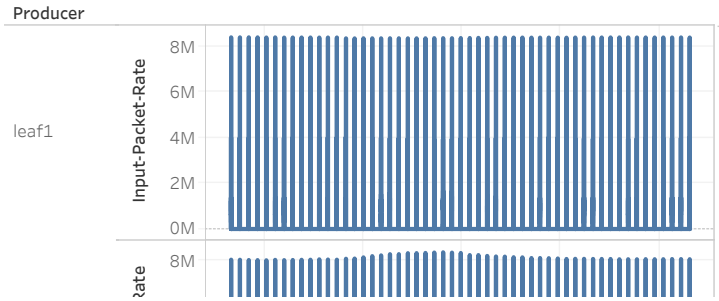
Cisco Network-Predictive Analysis Model || Project Showcase || January 17th

>Predictive Model Development for Network Element Failure Detection.

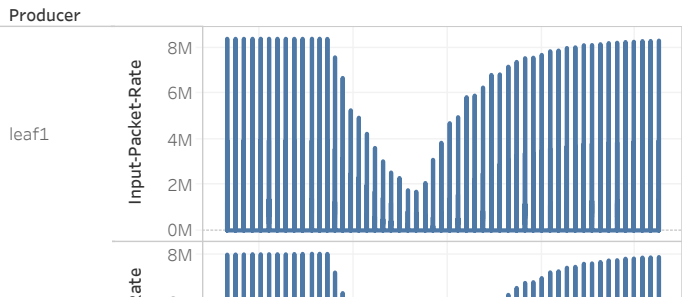
>Implementing 'Supervised' learning on the open-source datasets to predict the failure of a particular element in the network. The model implementing the learning algorithm uses prior probabilities with present data in a time series order to make future predictions.

>Testing the model on 'bgp' clear command that virtually shuts down a particular network element from the network.

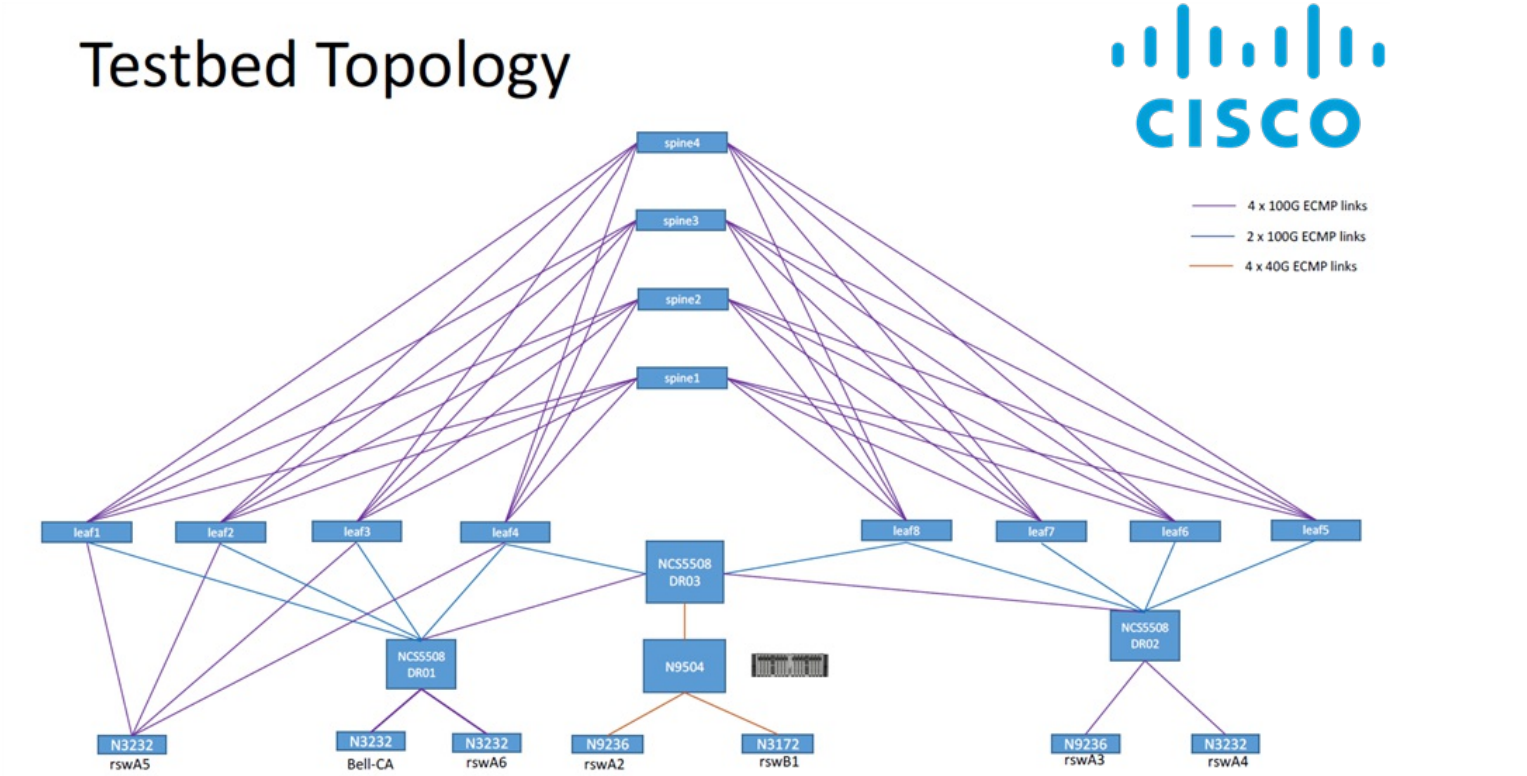
Normal Network Element Functioning



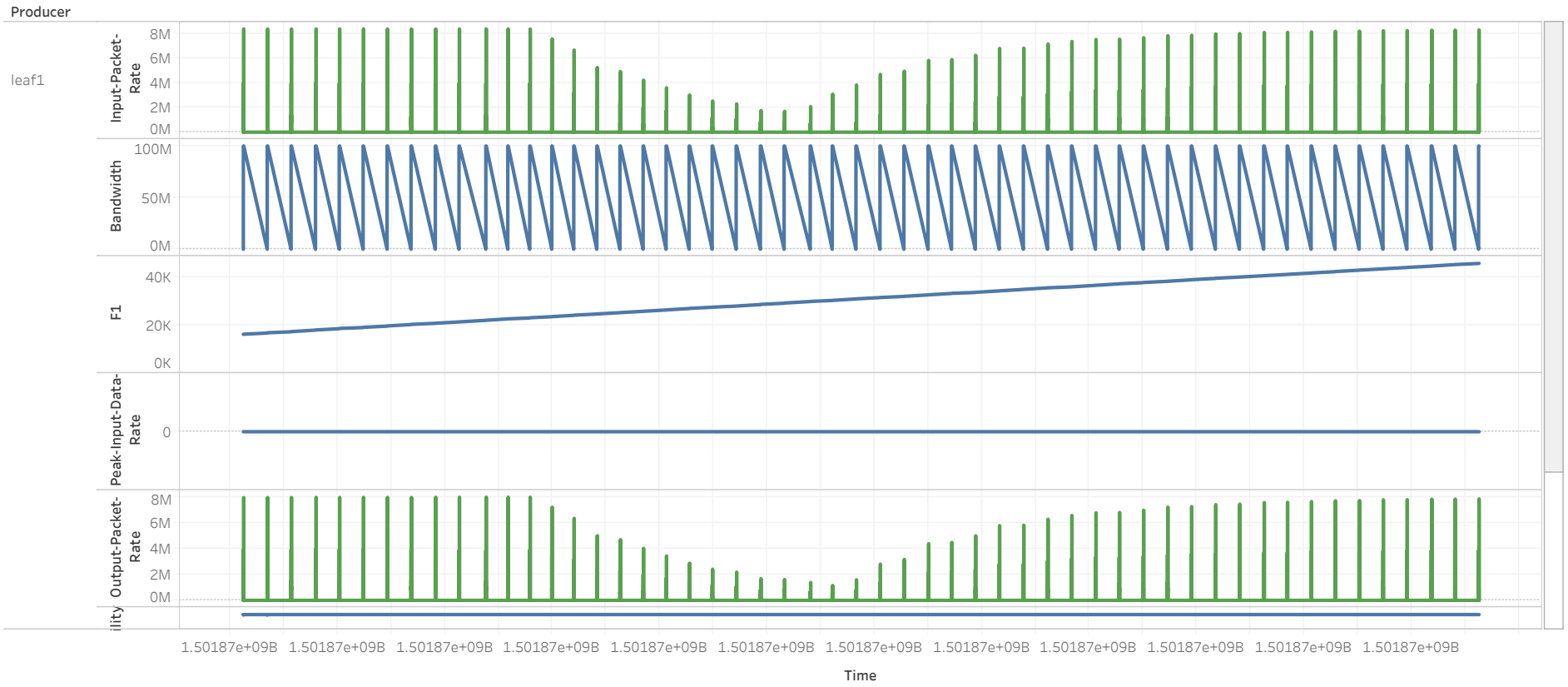
Network Element Failure and Recovery - BGP Clear



Cisco Network-Predictive Analysis Model || Project Showcase || January 17th

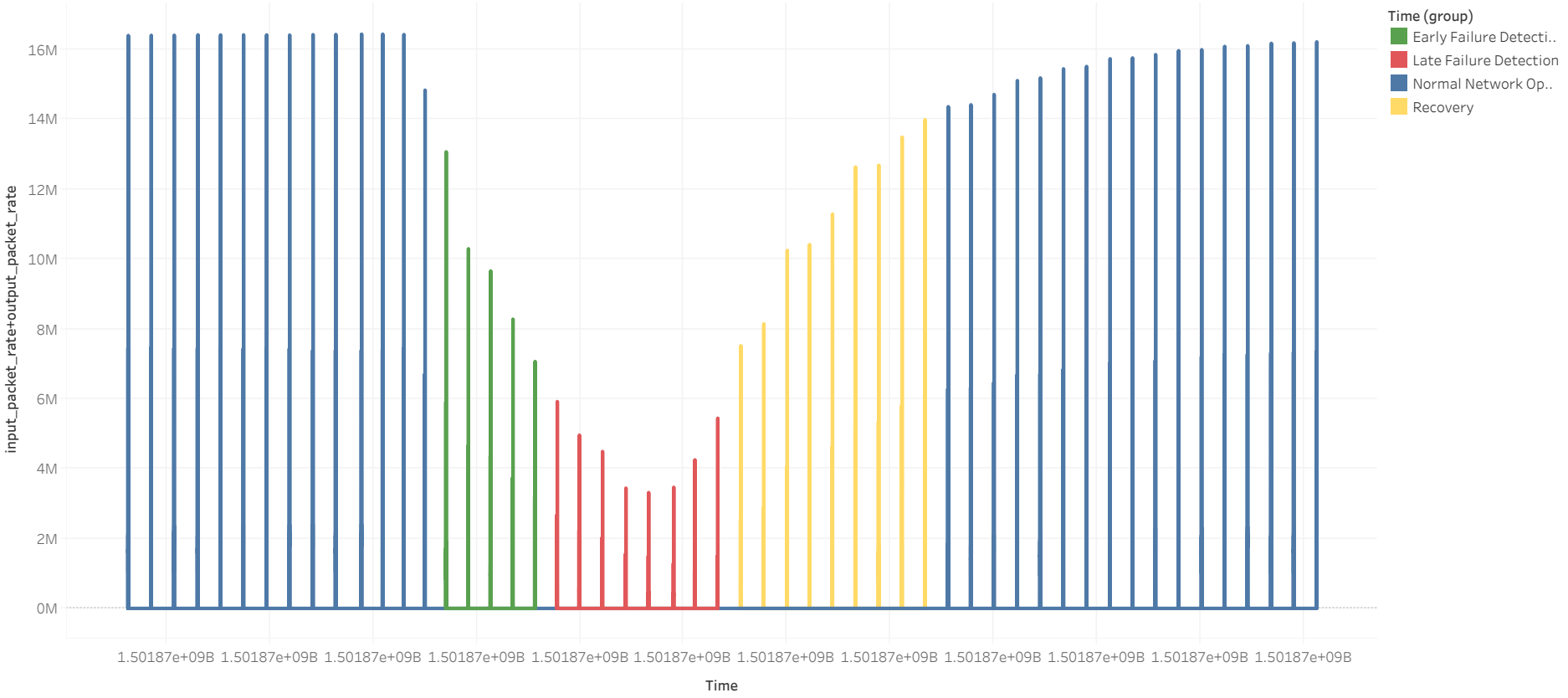


Cisco Network-Predictive Analysis Model || Project Showcase || January 17th

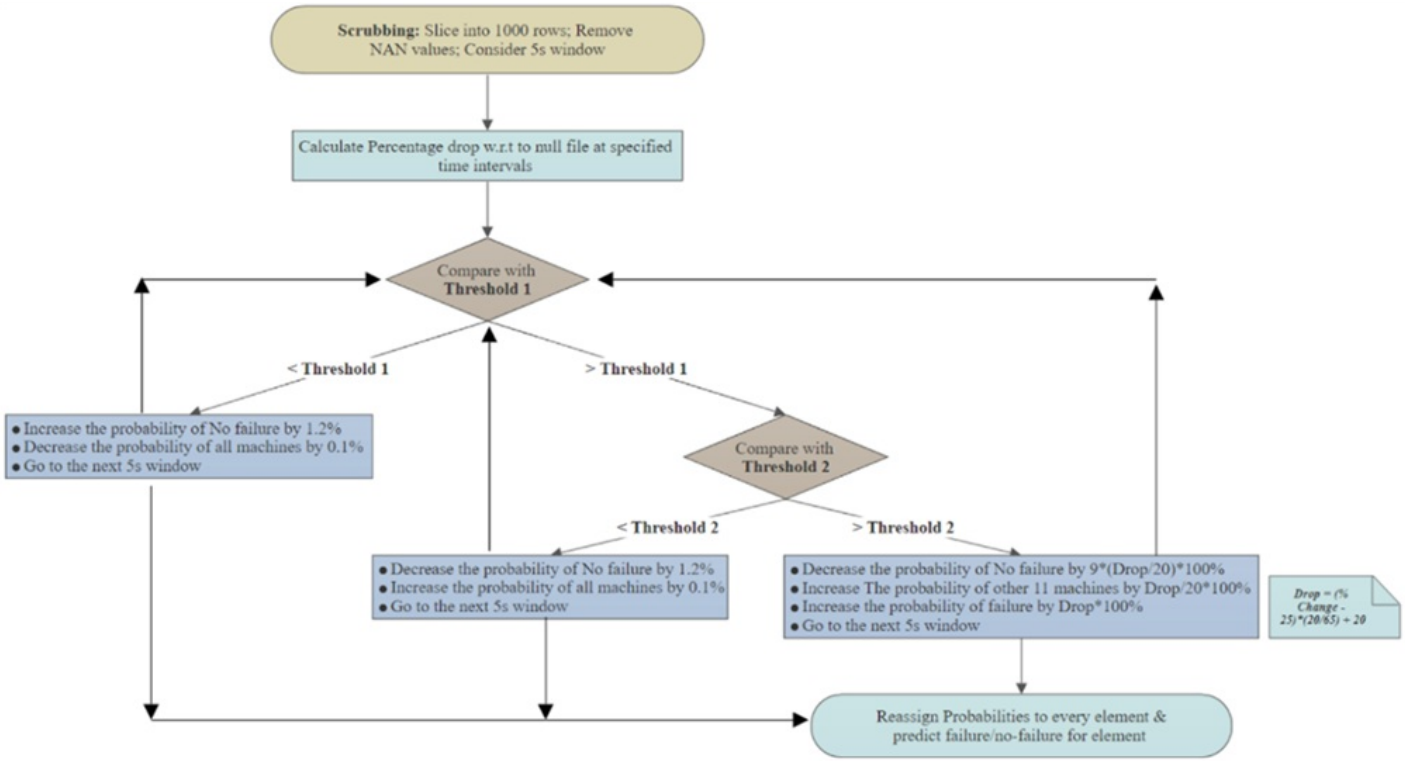


Cisco Network-Predictive Analysis Model || Project Showcase || January 17th

What and Why	Understanding of Network Topology	The Dataset - Training Parameters	Understanding the Task-in-Hand	The Model - Algorithm Flowchart	Model Performance- on Test Set	Further W.I.P. Applications & impact	References & Credits

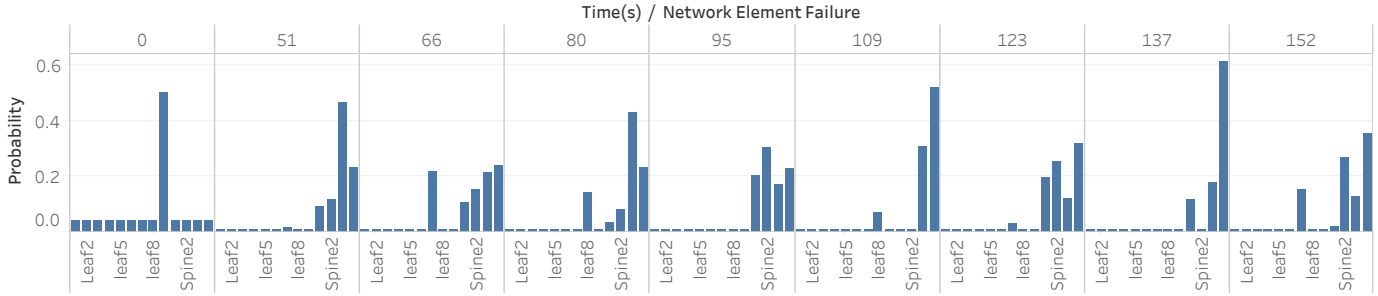


Cisco Network-Predictive Analysis Model || Project Showcase || January 17th

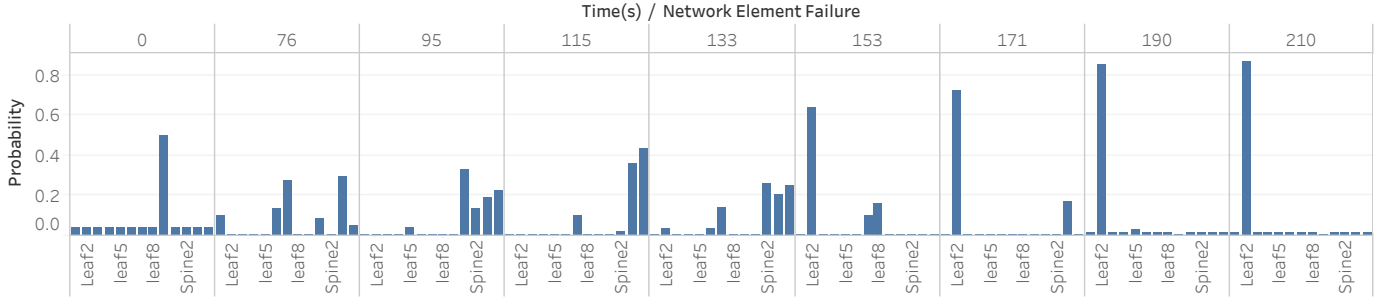


Cisco Network-Predictive Analysis Model || Project Showcase || January 17th

Case A



Case D



Case E

Futher Work in Pipeline:

>Develop mechanisms to utilize the test data as training data[once probabilities are calculated] to implove on the thresholds of the model.
>Develop extensions of the algorithm/model to predict other failures such as 'Port Fault' etc. The extensions to also predict multiple network element failures occuring at similar time instances.
>Publish the scrubbed and refined datasets on https://www.kaggle.com/ as a Client Sponsored Competition. Competition to target Data Science enthusiasts to detect various network anomalies.

Applications & Impact:

>**Reduced Costs**: Model to help re-route traffic and avoid 're-boot' costs.
>**Risk Mitigation**: Enable high QoS delivery by reducing 'down-time'.
>**Cross-Industry Applications:**
Predictive model developed can be implemented for solving various business

References:

> Project documentation and Python code:
https://github.com/nanduriprabhakar/Data_Science_Team_Project

> Cisco Network Data-set[Open Source]:
https://github.com/cisco-ie/telemetry

Credits:

> Prof. Daniel Egger [Executive in Residence, Pratt. School of Eng.] - Fundamentals of Data Science course.
>Rachel Brady and Drew [Cisco Systems] - Telemetry Data (open sourced)
>Chinmay Ajnadkar [Teaching Assistant] - Model Validation and Test Results Verification