## CS389 INNOVATION LAB

loT - Network Intrusion Detection System

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### PROBLEM STATEMENT

Network Intrusion Detection based on various machine learning & deep learning algorithms using UNSW-NB15 Dataset

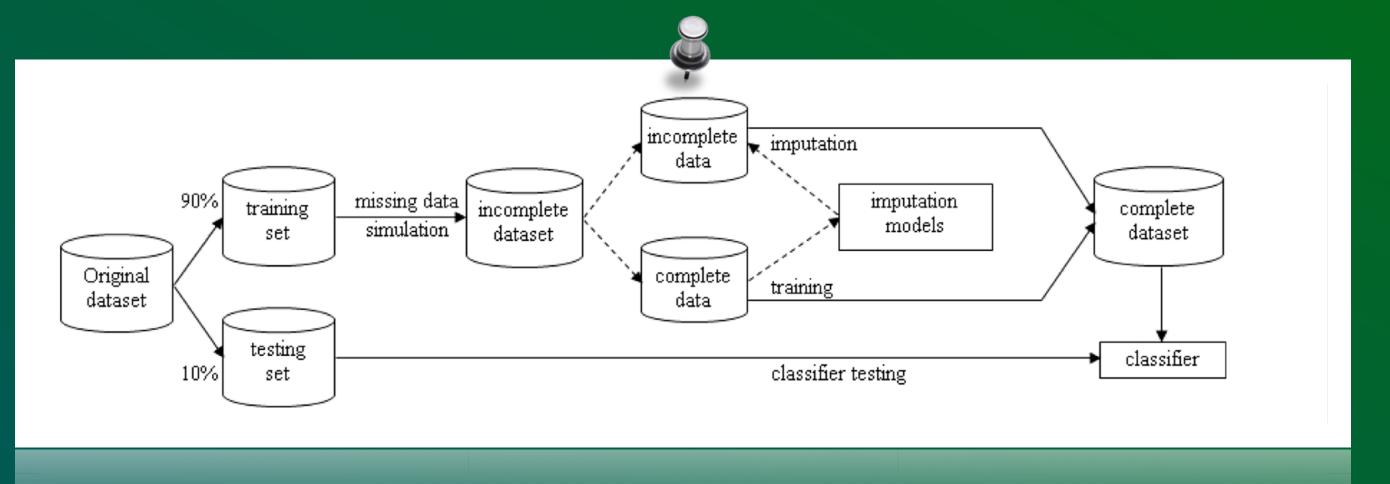
Performing Binary and Multi-class Classification & testing scoring metrics

#### MOTIVATION

- Interest in Machine Learning Domain
- What Innovation will I contribute to? (Target)
  - Better preprocessing of the dataset than already available methods. Performing best feature selection to favour model training. Trying large number of algorithms, tune their parameters & hyper parameters, and test their performance based on many statistical methods in order to find the best algorithm to perform classification of a new example.

### PROGRESS TILL NOW

- Preprocessing Techniques
- Exploratory Data Analysis (EDA)
- Feature Selection
- Classification Algorithms
- Hands on Experience of Libraries that will be used
- Hyper parameter tuning techniques

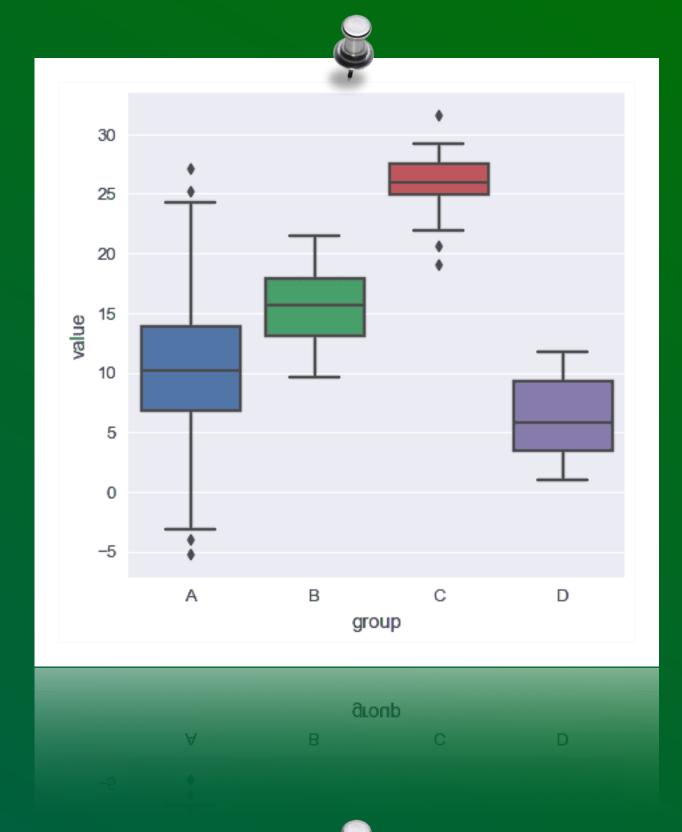


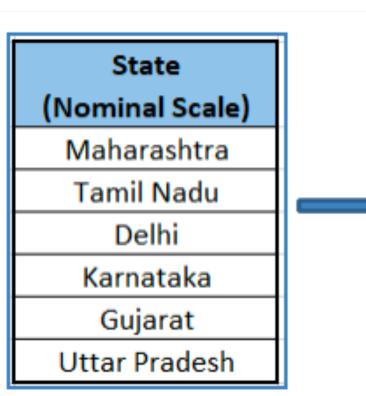


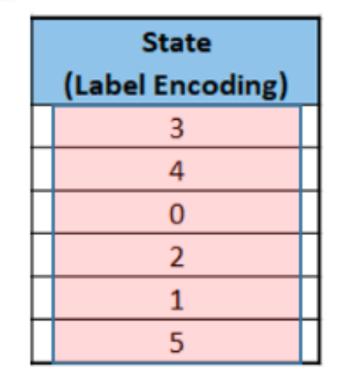
#### Correlation Heatman

Correlation Heatmap															1.00
Overall Quality -	1	0.53	0.56	0.5	0.48	0.6	0.58	0.57	0.43	-0.52	-0.57	-0.65	0.8		1.00
Total Squarefeet -	0.53	1	0.52	0.4	0.67	0.33	0.3	0.27	0.44	-0.42	-0.32	-0.34	0.72		- 0.75
Garage Area -	0.56	0.52	1	0.59	0.5	0.49	0.4	0.39	0.38	-0.4	-0.37	-0.44	0.65		
Has 3car Garage -	0.5	0.4	0.59	1	0.39	0.33	0.3	0.35	0.41	-0.3	-0.34	-0.39	0.62		- 0.50
1st FI Squarefeet -	0.48	0.67	0.5	0.39	1	0.32	0.24	0.21	0.39	-0.37	-0.29	-0.32	0.62		- 0.25
Year Built -	0.6	0.33	0.49	0.33	0.32	1	0.63	0.67	0.32	-0.51	-0.48	-0.59	0.57		
Year Remodelled -	0.58	0.3	0.4	0.3	0.24	0.63	1	0.61	0.2	-0.48	-0.59	-0.59	0.55		- 0.00
Concr. Foundation -	0.57	0.27	0.39	0.35	0.21	0.67	0.61	1	0.21	-0.5	-0.55	-0.63	0.53		
Masonry Vnr Area -	0.43	0.44	0.38	0.41	0.39	0.32	0.2	0.21	1	-0.23	-0.23	-0.27	0.5		0.25
1 Full Bath -	-0.52	-0.42	-0.4	-0.3	-0.37	-0.51	-0.48	-0.5	-0.23	1	0.43	0.5	-0.52		0.50
Kitchen Quality -	-0.57	-0.32	-0.37	-0.34	-0.29	-0.48	-0.59	-0.55	-0.23	0.43	1	0.69	-0.54		
External Quality -	-0.65	-0.34	-0.44	-0.39	-0.32	-0.59	-0.59	-0.63	-0.27	0.5	0.69	1	-0.6		0.75
Sale Price -	0.8	0.72	0.65	0.62	0.62	0.57	0.55	0.53	0.5	-0.52	-0.54	-0.6	1		-1.00
	Overall Quality -	Total Squarefeet -	Garage Area -	Has 3car Garage -	1st Fl Squarefeet -	Year Built -	Year Remodelled -	Concr. Foundation -	Masonry Vnr Area -	1 Full Bath -	Kitchen Quality -	External Quality -	Sale Price -		-1.00

Concr. For Kitche







Uttar Pradesh

# YET TO LEARN / TASKS REMAINING

- Statistical Analysis Techniques
- Getting Better Domain Knowledge
- PyTorch
- Pickle
- Compiling the Whole Notebook

# THANK YOU!