

## Topic: Naive Bayes

### 1.) Prepare a classification model using Naive Bayes for Salary data

	age	workclass	education	educationno	maritalstatus	occupation	relationship	race	sex	capital
1	39	State-gov	Bachelors	13	Never-married	Adm-clerical	Not-in-family	White	Male	2174
2	50	Self-emp-not-inc	Bachelors	13	Married-civ-spouse	Exec-managerial	Husband	White	Male	0
3	38	Private	HS-grad	9	Divorced	Handlers-cleaners	Not-in-family	White	Male	0
4	53	Private	11th	7	Married-civ-spouse	Handlers-cleaners	Husband	Black	Male	0
5	28	Private	Bachelors	13	Married-civ-spouse	Prof-specialty	Wife	Black	Female	0
6	37	Private	Masters	14	Married-civ-spouse	Exec-managerial	Wife	White	Female	0
7	49	Private	9th	5	Married-spouse-absent	Other-service	Not-in-family	Black	Female	0
8	52	Self-emp-not-inc	HS-grad	9	Married-civ-spouse	Exec-managerial	Husband	White	Male	0
9	31	Private	Masters	14	Never-married	Prof-specialty	Not-in-family	White	Female	14084
10	42	Private	Bachelors	13	Married-civ-spouse	Exec-managerial	Husband	White	Male	5178
11	37	Private	Some-college	10	Married-civ-spouse	Exec-managerial	Husband	Black	Male	0
12	30	State-gov	Bachelors	13	Married-civ-spouse	Prof-specialty	Husband	Asian-Pac-Islander	Male	0
13	23	Private	Bachelors	13	Never-married	Adm-clerical	Own-child	White	Female	0
14	32	Private	Assoc-acdm	12	Never-married	Sales	Not-in-family	Black	Male	0
15	34	Private	7th-8th	4	Married-civ-spouse	Transport-moving	Husband	Amer-Indian-Eskimo	Male	0

## 2.) Build a Naive Bayes model on the data set for classifying the ham and spam

	type	text
1	ham	Hope you are having a good week. Just checking in
2	ham	K..give back my thanks.
3	ham	Am also doing in cbe only. But have to pay.
4	spam	complimentary 4 STAR Ibiza Holiday or £10,000 cash needs..
5	spam	okmail: Dear Dave this is your final notice to collect your 4* ...
6	ham	Aiya we discuss later lar... Pick u up at 4 is it?
7	ham	Are you this much buzy
8	ham	Please ask mummy to call father
9	spam	Marvel Mobile Play the official Ultimate Spider-man game (...)
10	ham	fyi I'm at usf now, swing by the room whenever
11	ham	Sure thing big man. i have hockey elections at 6, shouldn%...
12	ham	I anything lor...
13	ham	By march ending, i should be ready. But will call you for sure..
14	ham	Hmm well, night night
15	ham	K I'll be sure to get up before noon and see what's what
16	ham	Ha ha cool cool chikku chikku : DR :

## Hints:

1. Business Problem
  - 1.1. Objective
  - 1.2. Constraints (if any)
2. Data Pre-processing
  - 2.1 Data cleaning, Feature Engineering etc.
3. Model Building
  - 3.1 Partition the dataset
  - 3.2 Model(s) - Reasons to choose any algorithm
  - 3.3 Model(s) Improvement steps
  - 3.4 Model Evaluation
  - 3.5 Python and R codes
4. Deployment
  - 4.1 Deploy solutions using R shiny and Python Flask.
5. Result Share the benefits/impact of the solution - how or in what way the business (client) gets benefit from the solution provided.

## Note:

1. For each assignment the solution should be submitted in the format
2. Research and Perform all possible steps for improving the model(s) accuracy  
Ex: Feature Engineering, Hyper Parameter tuning etc.
3. All the codes (executable programs) are running without errors
4. Documentation of the module should be submitted along with R & Python codes, elaborating on every step mentioned here