

Training Data

Spam?	E-mail body	Vocabulary
1	Money is free now	free
0	Pat teach 301	is
0	Pat free to teach	money
1	Sir money to teach	now
1	Pat free money now	Pat
0	Teach 301 now	Sir
0	Pat to teach 301	teach
		to
		tomorrow

$P(Y = 0)$	$P(Y = 1)$
4/7	3/7

m	$P(X_m = 1 Y = 0)$	$P(X_m = 1 Y = 1)$
301	3/4	0/3
free	1/4	2/3
is	0/4	1/3
money	0/4	3/3
now	1/4	2/3
Pat	3/4	1/3
Sir	0/4	1/3
teach	4/4	1/3
to	2/4	1/3
tomorrow	0/4	0/3

Test Data

Spam? E-mail body

Pat teach now

m	x	$P(X_m = x Y = 0)$	$P(X_m = x Y = 1)$
301	0	1/4	3/3
free	0	3/4	1/3
is	0	4/4	2/3
money	0	4/4	0/3
now	1	1/4	2/3
Pat	1	3/4	1/3
Sir	0	4/4	2/3
teach	1	4/4	1/3
to	0	2/4	2/3
tomorrow	0	4/4	3/3

$P(Y = 0)$	$P(Y = 1)$
4/7	3/7

	$P(Y = 0, X_1, \dots, X_M)$	$P(Y = 1, X_1, \dots, X_M)$
Pat teach now	0.01	0

	$P(Y = 0 X_1, \dots, X_M)$	$P(Y = 1 X_1, \dots, X_M)$
Pat teach now	0.01 / (0.01 + 0)	0 / (0.01 + 0)