Weekly Homework 3

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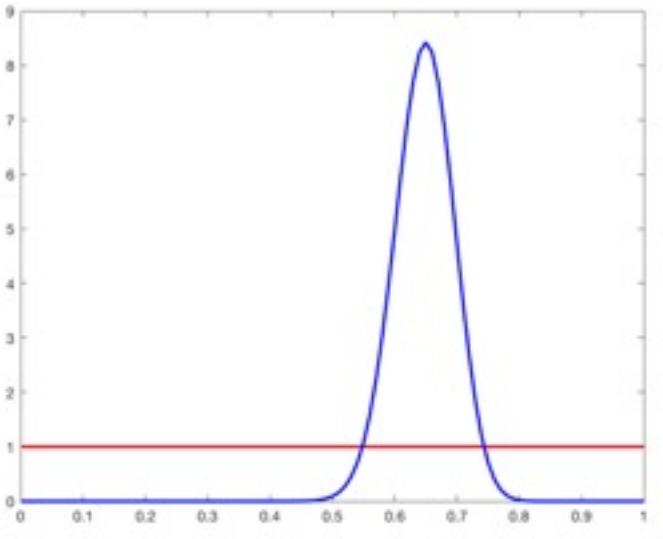
CS 1675: Intro to Machine Learning

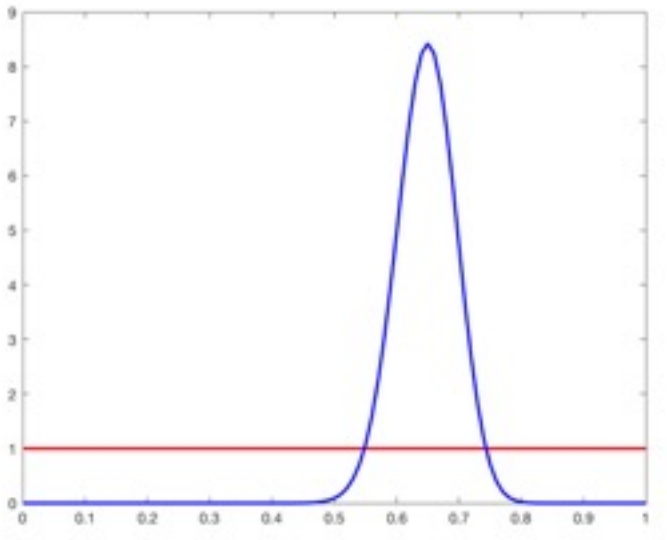
February 7, 2019

Problem 1. Bernoulli trials

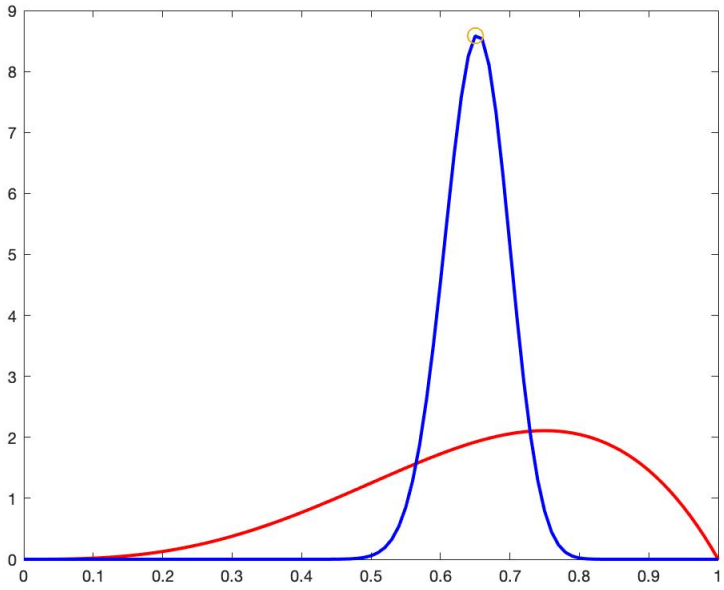
(a) ML estimate of $\theta = .65$
(b) Blue line = posterior, red line = prior



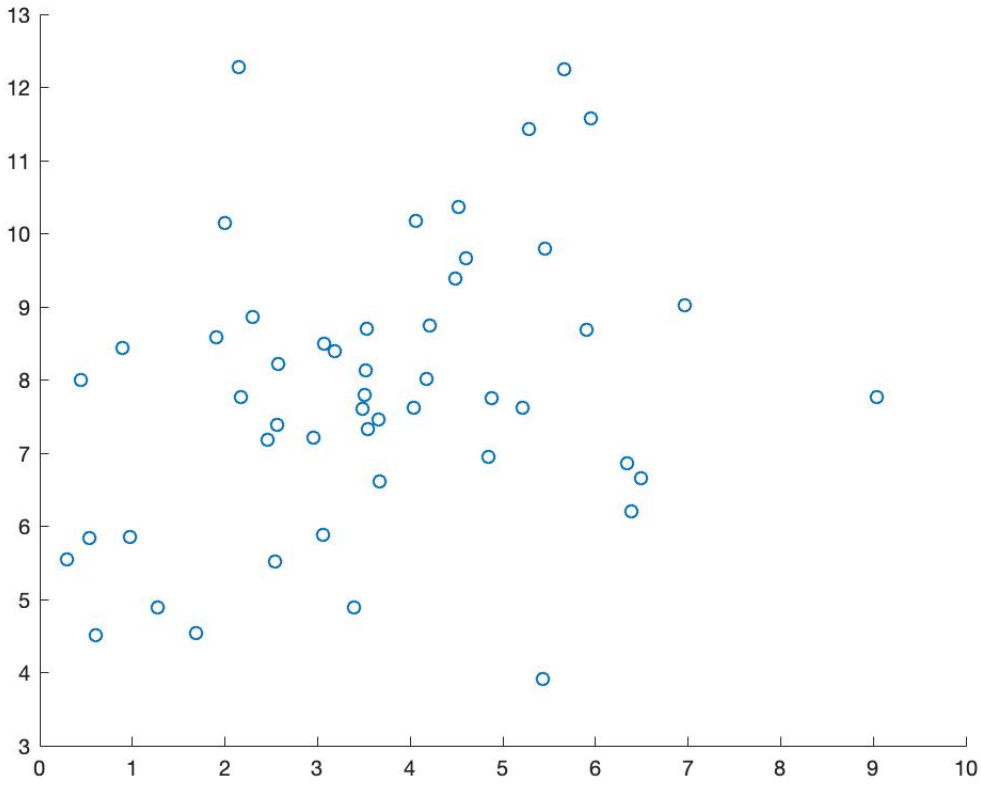
(c) $65/100 = .65$



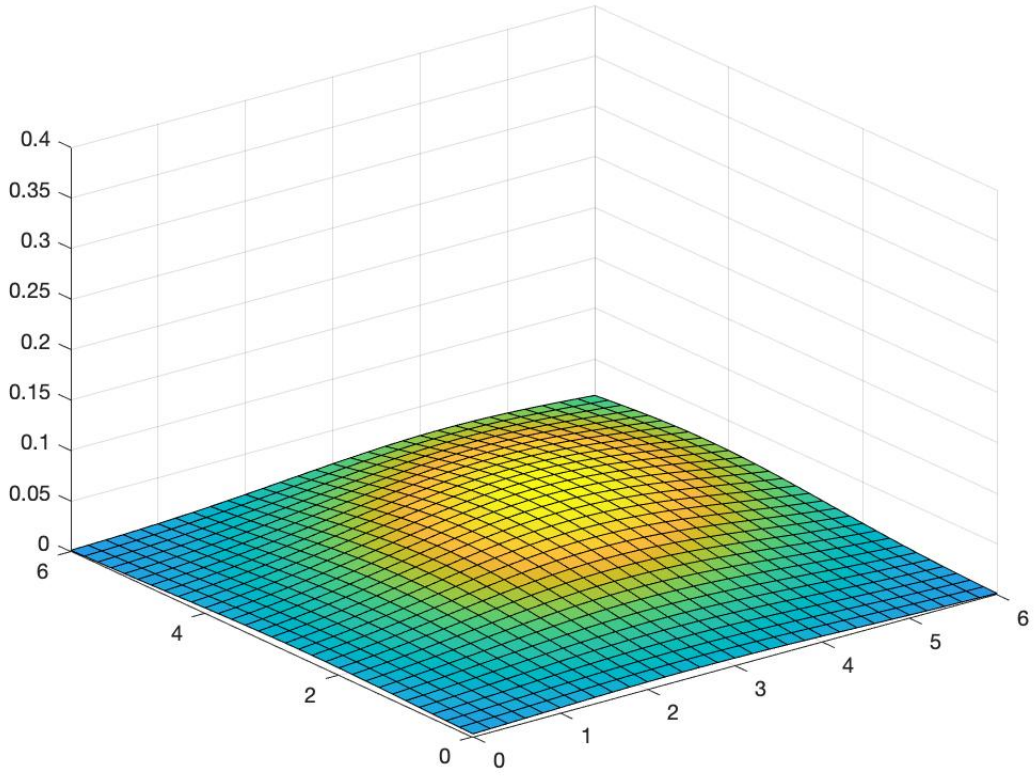
(d) $64/104 = .6538$



Problem 2. Multivariate Gaussian
(a)

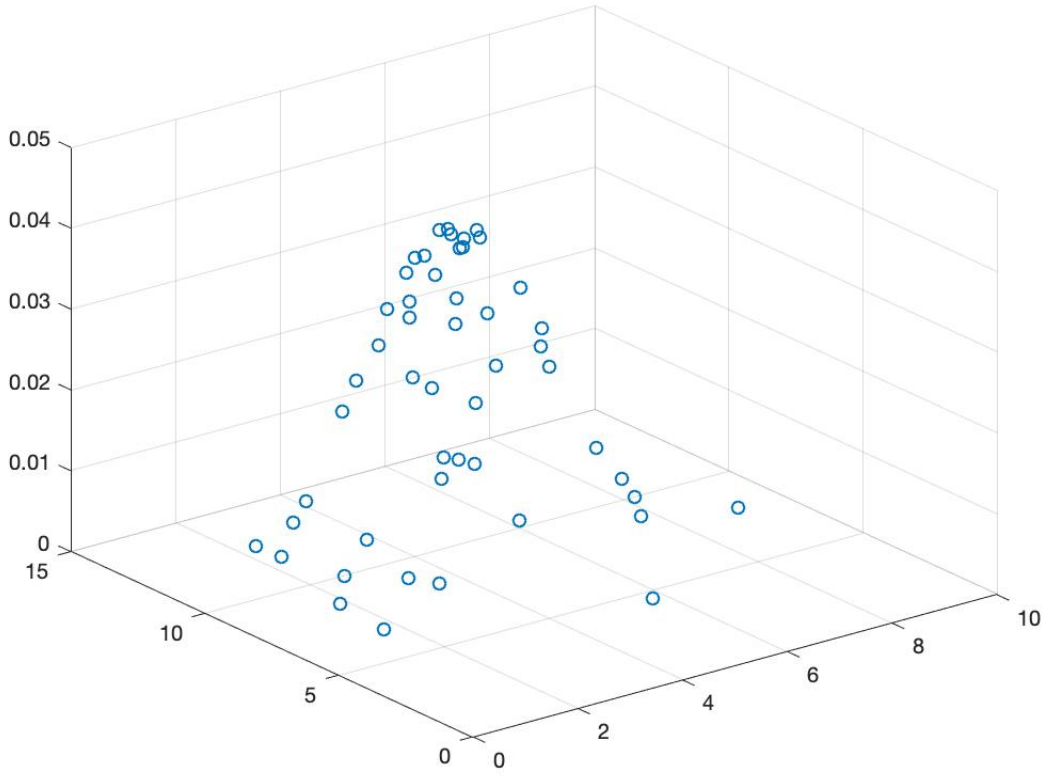


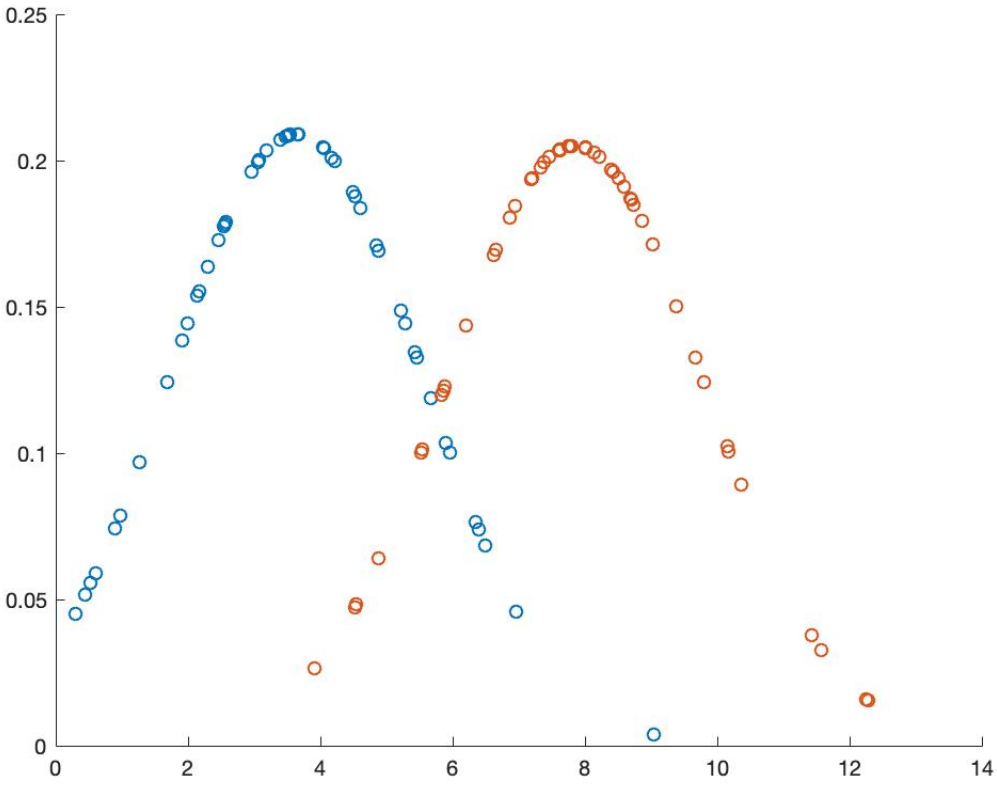
(*b*) ML estimate for the mean: 3.6377, 7.8506



(*c*)
(*d*) I believe that the multivariate model is better because it will be easier for us to see dependencies between variables.

Problem 3. Exponential distribution
(*a*) b = 1, b = .25, b = 4


0.05
0.04
0.03
0.02
0.01
0
15
10
5
0
0
2
4
6
8
10



(*b*) The ML estimate of the parameter b = 5.24