**Homework #2** (100 points)

207.547 Seminar in Experimental Psychology: Computational Modeling

Spring 2018

Due: Thursday, Aril 5th, at 11:59 pm

1. **(40 points) Consider these seven models from HW#1. Each of the eight retention models below predicts the probability of correct recall as a function of time interval *t* given model parametersas**

(0 < b < 3)

(0 < a < 1, 0 < b < 3)

(0 < a < 1, 0 < b, c < 3)

with a binomial likelihood function of the following form,

Download two R programs, *model\_select.R* and *MLE.R*, from the link provided in the ClassPrep, and modify them to calculate AIC and BIC values for the seven models above.

Attach a single ZIP file that includes copies of your modified R programs and a table summarizing model selection results. Also include one paragraph discussion of the results.

1. **(60 points) Program your own MLE code that estimates parameters of the model presented in class (model name: *ra\_prospect*) and compute AIC and BIC values of the ra\_prospect model.**
2. For a single subject (subject ID = 2)
3. For all subjects (i.e., estimate a set of parameter values for each subject)

Use the following parameter bounds

1. Modify your code so that your code now fit a model without the lambda (loss aversion) parameter. In other words, is set to 1 in this model. Compute AIC and BIC values of this model (model name: *ra\_noLA*).
2. Based on AIC or BIC values, which model is a better model?