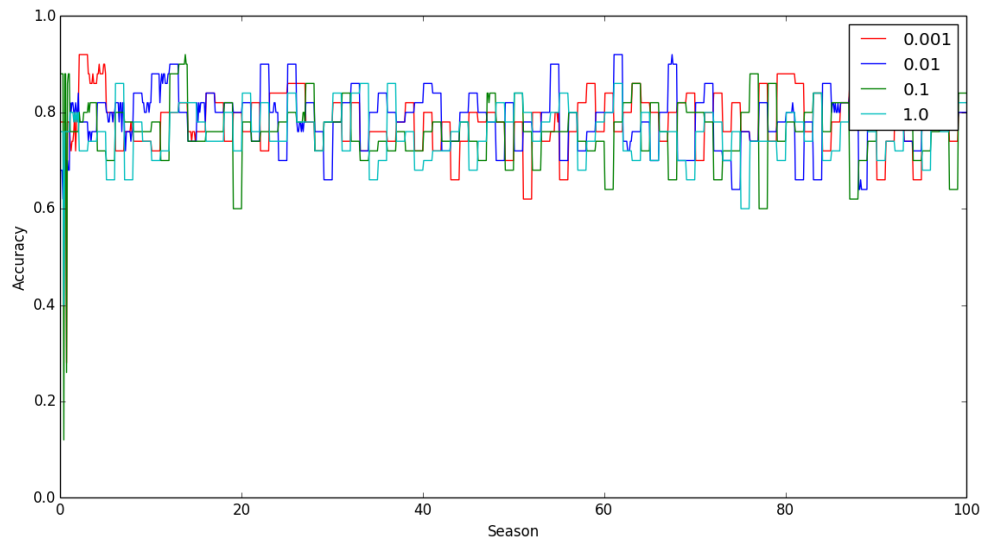
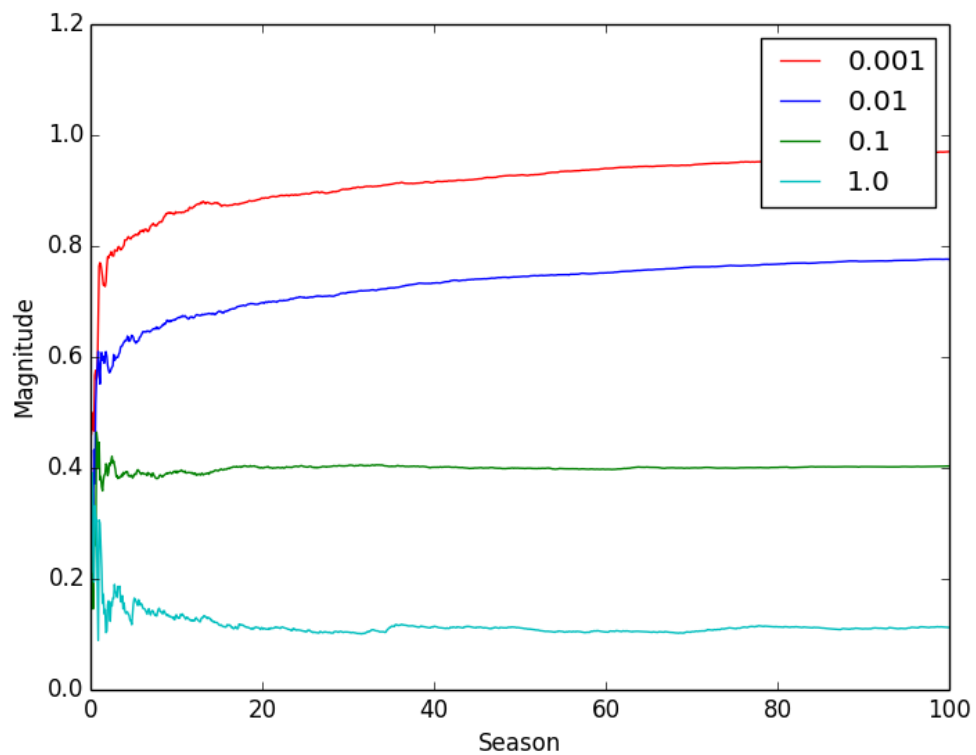


In this assignment, I used 300 steps for each season, and plot by every 30 steps. 100 seasons are set, and my learning rate is $\frac{1}{200s+50}$, set N_b is 1. Then I start my training

1. This figure shows the accuracy vs seasons for each lambda value



2. This figure shows magnitude vs seasons for each lambda value



3. I would like to select 0.001.

After I got all the a and b in each season, I calculate their accuracy for my validation set, because I want to compare their mean accuracy as the cross validation method. I got that λ of 0.001, 0.01 always get the highest mean accuracy values, and 0.001 has the highest possibility to get the highest mean accuracy. So based on this result I would like to pick 0.001 as my regularization constant

4. Now 0.001 is my regularization constant. I used 90% data as my training data. Through the training process, I get a list of a, b . Then import my test data set which is about another 10% of the whole data, I got the result accuracy can be as high as 80%, and the highest value has average value of 79.21% after I ran 10 times. Here are the data figure for λ of 0.001 one time.

