

# Homework-3

Capstone - Yuhua

1. Read Section 7.1, 8.1, 9.1, 10.1, 10.2.
2. Implement Algorithm 3 (UCB( $\delta$ ) with  $\delta = 1/n^2$ ) in the two settings from Homework-2. Plot the expected regret from UCB( $\delta$ ) and ETC for the two settings in two Figures (One figure is the expected regret of two algorithms for the normal rewards, and another is for the Bernoulli rewards). Compare the performance of the two algorithms.
3. Implement Algorithm 3 & Algorithm 6 (Asymptotically optimal UCB) & Algorithm 7 (MOSS) on the normal reward (the same setting as Homework-2). Plot the expected regret and the variance of the regret of the three algorithms in two Figures. (One figure is the expected regret, and another is the regret's variance). Compare the performance of the three algorithms.
4. Implement Algorithm 3 & Algorithm 7 & Algorithm 10 (KL-UCB) on the Bernoulli reward (the same setting as Homework-2). Plot the expected regret and the variance of the regret of the three algorithms in two Figures (One figure is the expected regret, and another is the regret's variance). Compare the performance of the three algorithms.
5. **Please submit the homework before 3:30pm, Oct 18th**, through slack. It should include 6 figures and your observation from the comparison.