

Assignment 2

Please refer the paper reading2-1.pdf to solve following problems (1)(2)(3)(4). Please refer the paper reading2-2 to answer problem (5).

- 1 (2 points)** The paper presents the reverse sampling based on IC model. Suppose we change the IC model to LT model. What should we change on the algorithm description about reverse sampling?
- 2 (2 points)** In the reverse sampling, the breadth-first search is employed. Can we replace it by the depth-first search? Explain why.
- 3 (2 points)** Suppose X is a random variable and computing $E[X]$ is $\#$ -hard. Describe a general framework to compute an approximate value of $E[X]$ by using sampling. (Suppose value of X can be computed efficiently in each sampling.)
- 4 (2 points)** The paper uses Chernoff Inequality twice. Please describe each case, including background, technique and reached results.
- 5 (2 points)** What is the advantage to use martingale approach?