Project Proposal

Project Title: Randomized Algorithms versus Deterministic Algorithms.

Project Abstract: This project is going to focus on the magic randomized algorithms bring to the field of Algorithms. It is going to speak about the pros and cons that randomization brings out in every algorithm. According to Wikipedia, "randomized algorithm typically uses uniformly random bits as an auxiliary input to guide its behavior, in the hope of achieving good performance in the "average case" over all possible choices of random bits."

My project is going to focus on the pros the randomized algorithm brings into Quick Sort, Min Cut, Random Forests and Binary Search Tree Algorithms. The project is going to implement these algorithms and find out whether randomization helps in the above-mentioned algorithms in case of running time and plot the graph which would help solidify the intuition of Randomized Algorithms.

Some researchers say that randomization helps testing an algorithm with innumerable test cases and are used for many ill-structured global optimization problems with continuous and/or discrete variables. I would also go through two specific papers highlighting their point of review with a take on my analysis of the papers.

Project Source:

1 - http://courses.washington.edu/inde510/516/AdapRandomSearch4.05.2009.pdf

2 - http://www.immorlica.com/randAlg/Karp91.pdf

3 - http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0132102

4 - http://theory.stanford.edu/people/pragh/amstalk.pdf

5 - http://ieeexplore.ieee.org/document/7355313/

Prepared by: Burde Prerana Kamath.