Performance Evaluation of Computer Systems and Networks

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Course Description

This course has a practical and problem-oriented style which appeals immediately to engineers engaged in real-world design and analysis of computer systems and data networks using simulation of queuing models. We discuss about common mistakes and how to avoid them, selection of techniques and metrics, art of data presentation, summarizing measured data, comparing systems using sample data. Then, we will go over different simulation techniques, common mistakes in simulations, and analysis of simulation results. To understand modeling the computer systems and networks, we introduce queuing theory, single queues, and queuing networks. The techniques of the course can be used to analyze and compare any type of systems including algorithms, protocols, network, or database systems. More specifically, we focus on discrete event-based simulation to simulate different queuing models. During the course, students do different simulation-based projects to evaluate the performance of different protocols or algorithms in their interest area of computer systems or data networks.

Required Texts and Useful References

-    R. Jain, "Art of Computer Systems Performance Analysis," Wiley, 1991, ISBN:0471503363

Course Content

-    An overview of performance evaluation
-    Measurement techniques and tools
-    Probability theory and statistics
-    Excremental design and analysis
-    Reviewing different Simulation techniques
-    Discrete event-based simulation
-    An introduction to different Queuing models

Grading Policy

-    Assignments   10%
-    Class Project I   20%
-    Class Project II   20%
-    Class Project III   20%
-    Final Exam   30%