

Thesis
B.Sc.

IDP

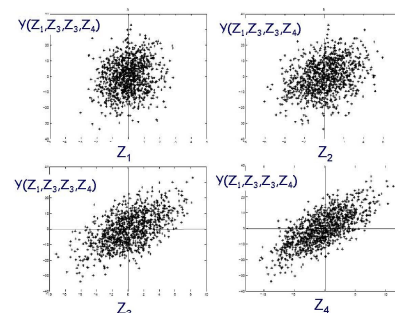
Sensitivity Analysis of Network Calculus and Queuing Net- work Models

Motivation

Sensitivity Analysis [1] is used to optimize models. We are interested in the optimization of performance models of computer networks. The modeling can be done with various different techniques:

Queuing Networks [3] are used to calculate average performance metrics. Deterministic Network Calculus [2] is used to calculate absolute worst-case performance metrics. Stochastic Network Calculus is used to calculate probabilistic worst-case performance metrics.

The sensitivity analysis can be used to identify relevant parameters of those models and assess their overall impact. This information can be used to optimize the precision and reliability of the model.



source: [1]

- [1] https://en.wikipedia.org/wiki/Sensitivity_analysis
- [2] http://ica1www.epfl.ch/PS_files/netCalBookv4.pdf
- [3] https://people.math.carleton.ca/~zhao/research/QueueingTheory_AdanResing.pdf

Your Task

- Familiarize with Network Calculus and Queuing Networks
- Familiarize with Sensitivity Analysis
- Write a framework to automatically apply Sensitivity Analysis to a given model
- Apply Sensitivity Analysis to Network Calculus and Queuing Network models

Requirements

- Knowledge of Python or Go

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