Summary

In this paper, I will discuss Stein's method as a technique to find upper bounds on the associated

approximation errors of the distribution of some random variable, specifically Stein's method for the

Poisson and normal approximations. I will prove the theorems and lemmas in Chapter 2 with my own

knowledge and reading relevant published papers (acknowledged in the bibliography). I will also discuss

a few selected applications of the method and work on all of them under the guidance of my supervisor.

Next, Chapter 3 focuses on a specific application of the method in configuration graphs; that is, triangle

counts in a multigraph. This is the core of my project. In this chapter, I discuss the basic framework

underlying the problem; that is, introducing the topics of configuration graphs and multigraph. Then, I

will use Stein's method for Poisson approximation to obtain an upper bound for the problem, under the

guidance of my supervisor. Lastly, I attended Professor Louis H. Y. Chen's lectures for the module

MA6292 in the National University of Singapore, in Semester 2, AY2014/15. Thus, I have also written

Chapter 4 which illustrates all of what I have learnt about Stein's method for normal approximation.