## Abstract

In this thesis, we will do an overview of Approximate Bayesian Computation (ABC) methods aimed at approximating posteriors while bypassing likelihood computation. In Chapter 1, we first introduce ABC in its most basic form which is rejection-ABC, and outline incrementally the aspects of ABC that requires tuning for better performance. We use rejection-ABC as the basic framework where we explore some innovations that are relevant to all variants of ABC.

In Chapter 2 and 3, we will do a brief overview of variants of ABC (ABC-MCMC and ABC-SMC) that seek to compensate for the drawbacks of rejection-ABC. We will also discuss parameter tuning, or in most cases we will show the need for it.