

# **An Algorithm for Approximating Integrated Likelihood Functions with Applications in Meta-Analysis**

**A Ph.D. Dissertation Prospectus**

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5/23/23

## **Introduction**

The research for my dissertation involves developing a novel algorithm for numerically integrating the likelihood function of a statistical model with respect to a nuisance parameter. This prospectus aims to demonstrate how the algorithm works and explain the appeal of using an integrated likelihood over other pseudolikelihoods to make inferences about parameters of interest in various models.

## **Motivation**

Much of statistical inference is concerned with the estimation of parameters in a probability distribution.

### **What is a Likelihood Function?**

### **What is a Pseudolikelihood Function?**

### **The Appeal of the Integrated Likelihood**

## **Methodology**

### **Feasibility**

### **Applications and Preliminary Results**

## **References**