Lesson 3: Likelihood-based inference for POMP models

Qianying (Ruby) Lin Spencer J. Fox Zian (Larry) Zhuang

Introduction

Objectives

Students completing this lesson will:

1. Gain an understanding of the nature of the problem of likelihood computation for POMP models.
2. Be able to explain the simplest particle filter algorithm.
3. Gain experience in the visualization and exploration of likelihood surfaces.
4. Be able to explain the tools of likelihood-based statistical inference that become available given numerical accessibility of the likelihood function.

Overview

A general framework of epidemiological inference includes three layers:

- The input: a model of interest and the given data
- A method for inference
- Inferences include estimation, uncertainty, prediction and forecast, and model selection.