Optimisation methods: Linear and Integer optimisation

Siddharth Bhat

Contents

Chapter 1

1D flows

1.1 Logistic eqn

$$\dot{N} = rN(1 - \frac{N}{K})$$

Chapter 2

2D flows

2.1 Types of bifurcations

- Saddle node bifurcation/ Blue-sky: Fixed points appear
- Transcritical bifurcation: Fixed points switch stability. $\dot{X} = RX - X^2$
- Pitchfork bifurcation: Appear in problems that have a symmetry.
  - Supercritical Pitchfork bifurcation: $\dot{x} = rx - x^3$.
  - Subcritical Pitchfork bifurcation: $\dot{x} = rx + x^3$.