

V. Linear and Non-linear Least Squares

Goals: - solve overdetermined linear and nonlinear systems of equations

- linear: Normal equations and orthogonal decomposition method

- nonlinear: Newton and Gauss-Newton methods

- only the numerical aspects (statistics later...)

Why: - curve fitting

In practice, one often has to determine some parameters of a given function (from natural laws or model assumptions) through a series of measurements.

Usually, the number of measurements m is much larger than the number of parameters n , that is $m \gg n$.

Ex.: (1) Model ① $g(t) = a_1 \cdot t + a_2$ (linear)

Model ② $g(t) = a_2 \cdot e^{a_1 t}$ (nonlinear)

no slides