

Optimization Models for Trend Filtering

Yoon Mo Jung

Department of Mathematics, Sungkyunkwan University

E-mail: yoonmojung@skku.edu

Abstract

Trend filtering is a regression problem to estimate underlying trends in time series data. It is necessary to investigate data in various disciplines. We propose a trend filtering method by adaptive piecewise polynomials. More specifically, we adjust the location and the number of breakpoints or knots to obtain a better fitting to given data. The numerical results on synthetic and real data sets show that it captures distinct features such as abrupt changes or kinks and provides a simplified form and brief summary of given data.

Keywords Trend filtering, Piecewise polynomial regression, Nonlinear regression