Extrapolation Models

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We discuss the role of linear models for two extrapolation problems. The first is the extrapolation to the limit of infinite series, i.e. convergence acceleration. The second is an extension problem: Given function values on a domain D_0, possibly with noise, we would like to extend the function to a larger domain D, $D_0 \subset D$. In addition to smoothness at the boundary of D_0, the extension on $D \setminus D_0$ should also resemble behavioral trends of the function on D_0, such as growth and decay or even oscillations. In both problems we discuss the univariate and the bivariate cases, and emphasize the role of linear models with varying coefficients.