Constrained P-spline regression

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Abstract
In various research areas including psychology, the relationship between predictor and criterion variables is often assumed to be of a particular non-parametric functional form, such as a monotone, single-peaked or stepwise relation. In this talk, we will present a method to check for such assumptions. This method is essentially non-parametric regression with constraints that reflect the assumed non-parametric form. As such, it constitutes a golden mean between exploratory and confirmatory data-analytic approaches. In particular, we will discuss P-spline regression with additional asymmetric penalties enforcing monotonicity constraints. The latter will be illustrated with data from research on cognitive development of children.

References

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