Regularization and penalization techniques and local modelling

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**(I).** Multiple linear regression: regularization and penalization methods

* least squares regression and Ridge regression
* regularization and penalization techniques

**(II).** Flexible mean regression: regularization and penalizations methods

* penalized likelihood regression for generalized linear models
* additive regression models and penalization techniques
* varying coefficient models and penalization techniques
* grouped regularization methods.

**(III).** Regularization and penalizations methods in mean and dispersion regression

* mean and dispersion estimation and P-splines approximations
* mean and dispersion estimation in a framework of proper dispersion models.

**(IV).** Nonparametric mean regression using local polynomial fitting

* from parametric polynomial regression to local polynomial regression
* asymptotic properties of local polynomial regression
* selection of procedure parameters

**(V).** Local likelihood methods and nonparametric logistic regression

**(VI).** Elements of nonparametric inference for functional data analysis.