On Lasso and Bioinformatics

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Since Tibshirani (1996) proposed the Lasso shrinkage model for variable selection in linear regressions, much work has been done on this interesting topic, including but not limited to asymptotic properties of the Lasso (Knight and Fu 2000), penalized estimating equations and model selection (Fu 2003), the fussed Lasso with applications to protein mass-spectrometry data (Tibshirani et al. 2004), Bayesian gene selection (Bae and Mallick 2004), the elastic net (ENet) model (Zou and Hastie 2005), classification and selection of biomarkers (Ghosh and Chinnaiyan 2005), boosted Lasso (Zhao et al. 2005), and most recently proposed adaptive Lasso (Zou 2006 and Zhang et al 2006) and autoregressive order shrinkage of time series data (Wang et al 2007). In this presentation, I will talk about recent advances on the Lasso and provide examples to demonstrate the techniques, including examples in bioinformatics studies.

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