

Contiguity in High Dimensions

Richard Lockhart, Simon Fraser University, Canada

In the last few years, there has been an explosion of competing methods for inference in high dimensional models. I will first talk a bit about my involvement with Ryan Tibshirani, Jon Taylor and Rob Tibshirani on work on conditional inference given a selected model. One issue which arises there is that of power. In parametric statistical models of fixed finite dimension contiguity results are usually obtained by considering a sequence of alternatives to some null model. This is effective because the null can be approached in a limited number of ways. Non-parametric models are generally infinite dimensional models but contiguity works by focussing on alternative sequences heavily loaded onto a fixed finite number of dimensions. In high dimensional regression, however, we propose to treat all directions of departure equally, provided they are aligned with the axes determined by the covariates. The result is that we study signed permutation limits for high dimensional quadratic forms to identify the relevant contiguity neighbourhoods and compute average powers of procedures. Results are sparse, so far.