

Some Issues Involved in the Comparison of Changepoint Location in Two Independent Curves

In many psychological and psychiatric studies, a research question of interest relates to the presence, or absence, of a changepoint. @@ Working with developmental data, for instance, researchers might want to know at what age does the reaction time for children, to a particular task, become the same as that for adults. Much research has been done over the years on the changepoint problem for a single sample. I consider in this talk a generalization of the simple changepoint problem, namely, comparing the location of the changepoint in two independent samples. The psychological question that motivated this work was twofold: first, to discover at what age do children stop making errors (on a visual processing task) at a higher rate than adults; and second, to discover whether this age is different for autistics than for healthy controls. Clearly, these two aspects are linked, and involve locating and comparing the changepoints (if they exist) for the two groups. A straightforward algorithm gives practitioners an easily implemented way to find the changepoint in each group separately. A combination of visualization and resampling (permutation and bootstrap) allows one to further attach significance statements. In this talk, I will highlight some of the issues that arose in attempting to find a solution to the problem as it was presented, and point to open questions that still remain.