

In Slope Tree, each time series is replaced by its slope with respect to time, including features and response.

In categorical task, if the slope of response is positive, we replace it to 1 and 0 if negative.

In linear task, I remove the cross term in the formula. In nonlinear task, the formula is given is SimData.

In the following, CS structure on X is used.

Linear task (here slope should be enough! If n is large enough, we should expect that FF does a good job)

1. $n = 100$: RF and FF fails completely (they only pick 1 or 2 in the top 10)
2. $n = 500$: RF picks 3 or 4/6 in top10 (ignores independent ones, 302&303) in continuous task and picks 3 or 4/6 in categorical task. FF picks all of 6 (sometimes 5) in top8 in continuous&categorical task (302&303 are ranked 7 and 8th, 1,2,3 &301 are perfectly ranked).
3. $n = 700$: RF picks 4/6 in top8 and 6/6 in top 20 in continuous task and pick 4/6 in top20 in categorical task. FF picks 5/6 in top 8 (good!) in both task.

Nonlinear task

1. $n=100$. Both fails (select no more than 2 in top15)
2. $n=500$: RF picks 1 and 301 easily, and pick 3/6 in the top 20 in both categorical and continuous task. FF picks 3/6 in top 8 but in others are missed even in top 15 in both categorical and continuous task.
3. $n = 700$: RF picks 2/6 and FF picks 3/6 in top 10.

Observation:

1. The categorical task may be harder than continuous task
2. If we only use slope and n is large enough, slope tree based on FF is good. However, in nonlinear task, the slope is not enough.
3. Even when n is small ($n=100$), WGCNA is perfect in that it perfectly groups all the slopes.