

Simulation Plan

R Markdown

- Number of Covariates: 2 settings: $p=10/20$
- Number of Responses: 2 settings: $q = 3/6$
- Sample Size for Training Data: $N_{train} = 400/800$
- Sample Size for Testing Data: $N_{test} = 1000$
- Number of Iteration: 1000
- Covariance Matrix for Covariates: $\Sigma = \mathbb{I}/AR(0.8)$
- Variations:
 - pre-treatment covariates X^b : Doesn't matter that much? TODO: Linking back with CCA
 - Post-treatment covariates X^e : matters
 - Linking error, i.e. $x \rightarrow y$: matters
- Treatment effect function: TODO: selection of the following functions considering the CCA setting
 - one-to-one:
 - Multiple-to-one:
 - Multiple-to-multiple:
 - function :
 - * linear
 - * non-linear
- Link function:
 - Linear: Linear Design Matrix
 - Non-Linear: Element wise square design matrix?
- Metrics Evaluated
 - Treatment Effect (& its variance): TODO: come up with a measure of uncertainty, variance is the best bet
- Treatment Recommendation: The reason that I would like to see something about it is because, at the end, we would like to apply this in a real life scenario where the recommendation are given.

$$\mathbb{E}(Y^e|T = 1) - \mathbb{E}(Y^e|T = -1)$$

$$\mathbb{E}(w\mathbb{E}(Y^e|T = 1) - w\mathbb{E}(Y^e|T = -1))$$