

SAM – A Shared Atoms Model for Dependent Clustering of Multiple Groups

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ABSTRACT

In this talk, I will introduce an ongoing work aiming to develop a new Bayesian nonparametric model called SAM, standing for “Shared Atoms Model.”

Motivated by the work of CAM (Fenti et al., 2021, standing for “Common Atoms Model”), we consider a problem in which multiple data sets are observed with potentially shared subpopulations. This implies that subjects in each data set are heterogeneous consisting of different subpopulations (clusters) and across data sets some, but not all, clusters are shared. The term “atom” refers to the cluster or subpopulation. We show via simulation that SAM is capable of identifying the depending clustering structure across multiple data sets and the corresponding shared clusters. Applications of SAM include any problems that need inference on shared clusters across groups of data sets. We consider a case where multiple sets of patients are enrolled across clinical trials treated with the same drug.