1151-62-177 **Han Yu** and **Rachael Hageman Blair*** (hageman@buffalo.edu), University at Buffalo, Department of Biostatistics, Buffalo, NY 14214. *Bootstrapping for the characterization of clusters and model selection.* Preliminary report.

Clustering is a challenging problem in unsupervised learning. In lieu of a gold standard, stability has become a valuable surrogate to performance and robustness. We describe an approach that leverages a non-parametric bootstrapping for a clustering method that captures the stability of the method, cluster and individual. Different frameworks enable different types of comparisons between clusterings and can be used in connection with two possible bootstrap approaches for stability. Specifically, the bootstrapping is used to assess confidence (stability) around clustering from the original dataset based on bootstrap replications. Alternatively, one can search over the bootstrap clustering results for an optimally stable partitioning of the data. The two schemes accommodate different model assumptions that can be motivated by an investigator's trust (or lack thereof) in the original data and additional computational considerations. This framework is further generalized to the graphical model, as a way of identifying stable graphs, pathways and communities. (Received August 17, 2019)