

1154-VU-2835 **Wako T Bungula*** (wbungula@uwlax.edu), 1725 State Street, La Crosse, WI 54601. *Clustering Algorithms: Stability of TDA Mapper Graphs.*

When a point cloud data is fed into a TDA Mapper algorithm, clustering algorithm is applied to create the nodes of the graph. Tamal Dey et. al. showed that the filtration of mapper graphs exist if a cover satisfies certain condition and if the data is topological space. If the data is point cloud, Single linkage and DBSCAN give filtration of mapper graphs as the parameter, cover size, increases, where as KMeans, average linkage and complete linkage do not. In this talk, we I will present the reasons the parameter cover size is important, Single linkage and DBSCAN give filtration of mapper graphs, and why KMeans, average linkage, and complete linkage do not give filtration mapper graphs. Finally, I will present that if a data is perturbed by a δ , then the bi-filtrations of the mapper graphs of respective data are at most 2δ -interleaved. (Received September 18, 2019)