Progress made:

The given paper has been read and understood. The linear dimensionality reduction such as PCA and MDS, considers Euclidean distance between the points in space, and reduces the dimension such that the distance between the points are preserved. The non-linear technique such as Isomaps considers points in input space and estimates the geodesic between the points by finding shortest path to faraway point, through intermediate hub.

The approach being used for the implementation is mentioned below.

1. For given input point, adjacency and distance matrix is calculated.
2. Adjacency is calculated using a range search, i.e. every point within a given range is considered neighbors and Euclidean distance between the neighbor points is used for calculating distance matrix.
3. Using the distance matrix, shortest path from every point to every other point is calculated using Dijkstra’s or Floyd’s algorithm.
4. After step 3, the distance matrix calculated using shortest path will be used for Multidimensional scaling.

Currently we are working on adjacency matrix and shortest path distance matrix calculation.

The implementation of adjacency and shortest path will be completed this week (week of November 3rd).

Remaining tasks and deadline:

1. Multidimensional scaling implementation – 15th November
2. Data set creation – 18th November
3. Evaluation:
   1. 1-NN classification – 22nd November
   2. Trustworthiness and continuity – 24th November
   3. Compare results with PCA - 26th November
4. Report - 29th November