**Lab 4 – Dimensionality Reduction and MLP**

1. Give some intuitive reason why unit hypersphere volume decreases (rather than increases) as # of dimension exceeds 5.
2. Dimensionality Reduction is very important, especially, considering using Machine Learning in Big Data applications. Below are the 2 papers you need to read. These will help better understand what we covered in the class. These would also help you in your project as well as when you will join the industry. The first paper is relative easier than the 2nd one which has more math.
3. <https://ieeexplore.ieee.org/document/9036908>

**Analysis of Dimensionality Reduction Techniques on Big Data**

1. <http://jmlr.org/papers/volume16/cunningham15a/cunningham15a.pdf>

**Linear Dimensionality Reduction:  
Survey, Insights, and Generalizations**

Just write a short summary of the **first paper based on your own understanding.**

1. **Write any key points that you have learned from the paper that you can possibly use in your project.**  In case you are not addressing any DR for your project now, write how DR can affect your project in future when you may have large data with many dimensions.