Analysis of the relative orderings of the differences between model predictions as opposed to a quantitative method is often required in cases such as customers expressing their preferences instead of giving numerical scores. The purpose of this research project is to use an algorithm based on the alternating direction method of multipliers (ADMM) to solve large-scale non-metric multidimensional scaling (NMDS) problems. The NMDS problem seeks to optimize the Gram matrix of the calculated position vectors by minimizing violations of the inequality constraints that express the ordering relations of their pairwise distances. ADMM is a method for large-scale optimization which splits variable x into two parts and performs alternating optimizations over each part. The problem is coded using Python and Matlab, allowing us to see what fraction of the ordering of the original distances is preserved. We are working with randomly generated datasets. We are also working with more interesting data, including Swiss Roll and S curve data generated using Python, and real-world data such as sets of related images. For our initial results, which did not include any code for ADMM, the fraction of the ordering of distances preserved was quite high, indicating that the relative ordering of the original distances was preserved overall.