Advanced Topics in Machine Learning (600.692)
Project

Instructor: René Vidal

Due Date: 04/21/2014, 11.59PM Eastern

Please submit a one page proposal describing the project you plan to do as well as the members of your team. The project topic should follow into one or more of the following categories:

1. **Theory:** Extend the theoretical results for the correctness of the methods discussed in class to new domains. For example, extend low-rank matrix completion to the case where the data is not missing uniformly at random, or extend algebraic subspace clustering to the case of affine subspaces (with rigorous analysis of the correctness), or extend matrix completion to the case where the data points are drawn from a union of subspaces, or extend the theoretical results for the correctness of SSC to include graph connectivity.

2. **Algorithms:** Propose new algorithms for solving one of the problems discussed in class. For example, how can you scale the SSC algorithm from 1,000 points in dimension 1,000 to 100,000 points of dimension 100,000?

3. **Evaluation:** Evaluate the performance of methods discussed in class on synthetic and/or real data. For example, perform an exhaustive comparison of 5 subspace clustering algorithms as a function of the dimension of the data, the dimension of the subspaces, the number of subspaces, the amount of noise, the amount of corruptions, etc. Or, compare 5 subspace clustering algorithms for face clustering or motion segmentation.

4. **Applications:** Use a combination of the methods discussed in class to solve a problem in your own area of research.

Submission instructions. Please follow the same instructions as in HW1.