1. **Deep Learning**
    - Rob Tibshirani will give a short introduction to the topic next week (Sept 4, 2014) and we will potentially discuss a few other papers. The goal would be to see if there are interesting papers that one can read for the next few weeks.
    - Some of the suggested papers (which have a theoretical angle) :
        1. Stephane Mallat, *Deep Learning by Scattering,* http://arxiv.org/abs/1306.5532
        2. Arora, Bhaskar, Ge, Ma, *Provable Bounds for Learning Some Deep Representations,* http://arxiv.org/abs/1310.6343
        3. Livni, Shalev-Shwartz, Shamir, *An Algorithm for Training Polynomial Networks,* http://arxiv.org/abs/1304.7045

      A critical paper which at least appears pretty important: Szegedy et al., "Intriguing Properties of Neural Networks", http://arxiv.org/abs/1312.6199

2. **Submodularity**
    - Nina Balcan (was) volunteered to lead a session on submodularity and its connections to active learning

3. **Computational and Statistical Tradeoffs**
    - Akshay was volunteered to lead a session on this.
    - There are quite a few recent papers on these issues and the exact reading list is TBD. Some papers that were discussed:
        1. Zhang, Wainwright, Jordan, *Lower bounds on the performance of polynomial-time algorithms for sparse linear regression,* http://arxiv.org/abs/1402.1918
        2. Wang, Lu, Liu, *Nonconvex Statistical Optimization: Minimax-Optimal Sparse PCA in Polynomial Time,* http://arxiv.org/abs/1408.5352
        3. Wang, Berthet, Samworth, *Statistical and computational trade-offs in estimation of sparse principal components,* http://arxiv.org/abs/1408.5369

4. **Semiparametric Learning**
    - Samy will lead a session?

5. **Sparse PCA, Fantope projections, etc.,**
    - Jing Lei will lead a session? [Jing: OK.]

6. **Fast Matrix Algos, NN Searches**
    - Alex Smola will lead a session?

7. **\ell_0 penalized regression via modern optimization techniques (?)**
    - Suggested by Ryan. Rahul Mazumder will have a paper on it (hopefully) in the near future.

8. **LP/SDP hierarchies**
    - Aaditya could lead a session on this if there is interest.

9. **Topics from "Breakthroughs in Statistics" book(s)**
    - Aaditya will do some poking about to find topics?

10. **Computationally tractable machine learning**
    - There has been a number of papers along these lines in the recent past. Some of the possible topics
        1. Arora and co-authors on provable algorithms for dictionary learning.
        2. The line of work on spectral methods (Anandkumar et al.,)
        3. Siva-Wainwright-Yu paper on theoretical guarantees for the EM algorithm
        4. ...
    - Aaditya volunteered to lead a session on this. Gautam can lead a session as well.

11. **Hashing for Statisticians**
    - Ale was volunteered to lead a session on this.
    - The following might be relevant :
        1. Ping Li's website : https://courses.cit.cornell.edu/pl332/
        2. Shah, Meinshausen, *Min-wise hashing for large-scale regression and classification with sparse data* http://arxiv.org/abs/1308.1269

12. **Subspace clustering (also related to high rank matrix completion)**
    - We assume unlabelled data are drawn from a union of low-rank subspaces that do not need to be independent to each other. The setting does not require knowledge in the number of subspaces, dimension of each subspace, and etc.
    - Yu-Xiang can lead a session some time, talking about the current progress in sparse subspace clustering (SSC) and some open challenges.
    - High rank matrix completion is simply subspace clustering problem when data are only partially observed.

13. **Global optimum guarantees for nonconvex problems**
    - Ryan volunteered to do lead a session on this
14. **Ranking, partial ranking aggregation**
    - Justin volunteered to lead a session
15. **Fast stochastic methods**
    - Ryan suggested this
    - potential topic at google
16. **Stochastic block models**