Fall 13 Stat 803: What’s so cool about getting the data right?

Time: TuTh 9:30-10:45 AM  
Location: Room 374, Van Hise (New room!)  
Instructor: Peter Qian, Department of Statistics, peterq@stat.wisc.edu  
Office Hours: TuTh 12:00-1:00pm  
Grading: Homework 10%, Class discussion 20%, Project 70%

If you ever wondered:
1. The data science behind Sudoku (Fig. 1)?
2. How to take the “best” subsample of big tall data (large n)?
3. The right data matrix (a.k.a. sort of irrepresentable condition) for big wide data (large p)?
4. Optimal construction of 16 runs for five 2-level factors?
5. Variance reduction for integration and stochastic programming?
6. How to run a simulation experiment (e.g. finite element analysis)?
7. The meaning of the buzz word “UQ: Uncertainty Quantification”?
8. The interface between data collection and data modeling?
9. Sequential design vs. active learning?
10. Response surface methodology vs. trust region theory?

You may find some answers in this class.
**Material:** 1/3 from selected chapters of Wu and Hamada (2009), Experiments, John Wiley. 2/3 from papers. No prior knowledge of design of experiments is required.