CEE7430 Homework 8: Nonparametric Methods

Due: 4/10/09

Reading:

1. Hydrologic Engineering Review Paper.
2. Lall, U. and A. Sharma, (1996), "A Nearest Neighbor Bootstrap for Time Series Resampling," *Water Resources Research*, 32(3): 679-693, http://www.agu.org/pubs/crossref/1996/95WR02966.shtml.
3. Sharma, A., D. G. Tarboton and U. Lall, (1997), "Streamflow Simulation: A Nonparametric Approach," *Water Resources Research*, 33(2): 291-308, http://www.agu.org/pubs/crossref/1998/97WR02429.shtml.
4. Tarboton, D. G., A. Sharma and U. Lall, (1998), "Disaggregation Procedures for Stochastic Hydrology based on Nonparametric Density Estimation," *Water Resources Research*, 34(1): 107-119, http://www.agu.org/pubs/crossref/1998/97WR02429.shtml.

1. The readings above list four papers in the area of Nonparametric methods for stochastic hydrology. Read each briefly and write a short (1/4 to 1/2 page on each) summary of the key ideas in each paper.

2. One of the above four papers has been assigned to each of you for more detailed reading and presentation to the class:

   1. Roundy
   2. Mahat
   3. Byrd
   4. Anayah

   For the paper assigned to you based on the numbers above you should carefully read it and write a more detailed two page review of the paper. You should also prepare a 15 min presentation to be presented in class on 4/9/09 that reviews the key findings and contributions of the paper for the class. Your review should address the following:

   - Summarize the key ideas in the paper and comment critically on assumptions, methods, results and conclusions in terms of their correctness and significance.
   - Contributions and audience. What are the important contributions of this paper
   - Technical soundness. Is the paper technically sound? Are the methods fully described? Is the mathematical development complete and accurate?

3. Stochastic model assessment. In your readings and work for this class you have seen several measures and metrics that a stochastic model should reproduce and that can be used to assess the effectiveness of a stochastic model for simulating streamflow for

the purposes of water resources planning and management. In this assignment I would like you to compile as comprehensive a list as possible of these metrics. For each metric you should indicate the following:

- what it is, defined in words and an equation if necessary
- an example of it (use examples from papers in preference to calculating examples yourselves)
- how it should be used and interpreted
- any other comments