Machine Learning Workshop

Workshop Preceding GLEON 19, Mohonk Mountain House, Monday November 27, 2017

Workshop Overview:

Machine learning encompasses a number of powerful, data-intensive tools that are rapidly moving out of the halls of computer science departments into a diverse number of fields. Concurrently, larger, more complex datasets are becoming available to environmental scientists, potentially enabling the application of more advanced machine learning techniques.

This workshop will introduce a number of popular, machine learning techniques. We will use the R scientific computing environment and open datasets to explore example applications of both broadly-used and cutting edge machine learning techniques.

**Workshop Leads:**Ken Chiu, Professor, Computer Science, Binghamton University, NY

Luke Winslow, Postdoc, Biological Sciences, Rensselaer Polytechnic Institute  
Taylor Leach, Postdoc, Biological Sciences, Rensselaer Polytechnic Institute

Tim Hung, Undergrad, Computer Science, Binghamton University, NY

DRAFT AGENDA

8:30 - 9:00 Get data and packages loaded

9:00 - 9:30 Opening Remarks and introduction to machine learning

9:30 – 10:30 Main course: Machine learning techniques and example use in R

- Cluster Analysis

10:30 - 10:50 BREAK

10:50 – 11:50 Main course: continued

Support Vector Machines

11:50 Organize breakout groups and break for lunch

12:00 - 13:30 Lunch (think about ideas over lunch)

13:30 – 13:50 Breakout groups with application brainstorming sessions

13:50 - 14:50 Main course: Machine learning techniques and example use in R

Random Forest

14:50 - 15:00 BREAK

15:00 - 16:00 Main course: Continued

Neural Networks

16:00 - 16:30 Breakout groups with application brainstorming sessions with final report back