Education Session

1. Existing courses
   a) Yolanda Gil on "Data Science for Non-Programmers" course
   b) Sai Ravela
   c) Suzanne Pierce and Enrique Cabral on 2016 IS-GEO Summer School
   d) Padhraic Smyth on UCI NRT
   e) Victor Pankratius
   f) Information from others

2. Discussion on what else is needed?

3. Next steps and possible activities for the group.

Other courses

UT Austin - **Intelligent Systems in Geosciences**
Dr. Suzanne Pierce (UT Austin), Dr. Ritu Arora (UT Austin),
Dr. Enrique Cabral Cano (UNAM) and Dr. Gibran Fuentes Pineda (UNAM)

https://world.utexas.edu/abroad/programs/mexico/geosciences

Students: Undergraduates, IS and GEO (mixed)
Instructors: 3 or more, from IS and GEO
Style: Wider coverage of a large range of topics.
Primary assignments: in groups

Lessons learned (what works well, what does not):
   A preliminary programming course should be made a prerequisite so that
   the IS-GEO class can be made more about the application of CS/IS
    techniques, and has more depth on selected topics.

   Happy to share material (e.g. by email).
   Entry from: rauta@tacc.utexas.edu

Other courses

Sai Ravela

MIT

1) **Machine Learning Foundations for Natural Systems**, Parts 1 and 2; Fall and Spring 2017

2) **Quantifying Uncertainty**, 2012+, occasionally offered, special focus on learning

Other courses

Juan M. Restrepo

1) Computational Statistical Physics (graduate):
diffusion and jump processes
several versions of monte carlo
percolation theory and computation
(applications in machine learning, graphics, clustering data,
data assimilation).

2) Bayesian Reasoning (undergrad/grad) - soon to come
Goes from least-squares to its statistical analogue and to the interpretation of results.
Presumes competency in linear algebra.
Applications to the analysis of data, to combining model and data, applications to risk analysis.
Interpretation issues and preconditioning/regularizing are central topics.

(3) Inverse Methods (undergrad/grad)
The usual fare, it has been supplemented with data assimilation.

Our CS group offers a number of courses
Machine Learning:
http://eecs.oregonstate.edu/artificial-intelligence-and-robotics
Data Engineering:
http://eecs.oregonstate.edu/data-science-and-engineering

Other courses

Shashi Shekhar

University of Minnesota courses intersecting GEO and IS:

1) Csci 5715 **Spatial Computing** (Fall 2016)

2) Csci 8715 **Spatial Database Research** (Spring 2016)

Other courses

Hassan Ali Babaie

Georgia State

Geoinformatics, Geol 4123/6123

Other courses

Mary Hill

"Food, Energy, Water, the Environment, and Public Policy – Opportunities and Tradeoffs"

* Students: Freshman Honors students.
* Presently uses pretty standard web approaches, but I think it has huge potential for enhancement through IS GEO.

Description:

Using an introduction from me and proceeding with their own web discoveries, they submit one page writing assignments and as a class we define 3 topics from anywhere in the world within the subject area.
We use this to create what is presently a regular poster. We also decide on one topic for a policy conference, for which they play roles of public figures they can research on the web.

Opportunities for IS-GEO - ideas:

1. Ways for them to access and analyze data streams of interest – so they can go beyond the already prepared graphs and visualizations.

2. Develop something much more interactive than the static poster, including, perhaps, something accessible by cell phone.

3. Ways to visualize global tradeoffs for food, energy, water, the Environment, and Public Policy.

Discussion

What else do we need?

Discussion

Next steps + possible activities for the group?

1) Educational paper
2) Website with links to courses, teaching materials, lessons learned, etc.?