CS for Insight (CS 41)

[**One-page overview**]

CS 41: CS for Insight

Motivation: *CS-for-insight* is eclipsing *CS-for-software*

Goal: Students practice with computing skills/tools useful in many contexts

Soundbite: CS 5, part 2 …

*Skills / **Weeks (draft ideas)**:*

cmd-line and IDE use
file-reading and -writing
regular expressions
source control
parsing
scripted data retrieval
hashtables + dictionaries
feature vectors (words)
graph algorithms and stats
creating and querying a DB
installing new libraries
learning new libraries
leveraging new libraries
basic plotting/graphing
visualization libraries
pixel-processing libraries
GUI-building libraries
MVC design pattern
images-as-data
basic classification
machine learning libraries
ML's context
regression and modeling
web technologies
online hosting (git)
juggling large systems
working w/other languages
interfacing with hardware
arduino and rasp. pi

open-ended final projects

(1) Download and <u>parse</u> 250k Jeopardy questions

(2) <u>Model</u> Shakespeare vs. J.K. Rowling by word-choice

(3) Compute statistics on one's Facebook-friend <u>graphs</u>

(4) Data project #1: <u>spatial summary</u> of a feed's topic-interest

(5) Data project #1: using <u>visualization</u> libraries

(6) Pixels and user-interfaces: insights into <u>images</u>

(7) ML project #1: naïve <u>classifiers</u> e.g., indoors, outdoors, or neither?

(8) ML project #2: additional regression <u>models</u> e.g., *how* indoors

(9) Web project #1: presenting results via <u>libraries</u> + other languages

(10) Web project #2: emphasizing <u>other languages</u>

(11-14) <u>Final project</u> on a topic of each student/group's choice
                - culminating in presentation and web portfolio

Administration:

- Welcomes projects <u>overlapping</u> with other efforts, as appropriate
- Alternate lecture and lab sessions
- Offer both half- and full-course paths through the class
- During final-projects, invite alums to present on their uses of computing