Week 8 – CPaT Stats: Visualizing (Tree) Data with Processing

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The purpose of this lab is to acquaint you with how you might use Processing to create 2-D or 3-D data visualizations. General Information about the lab is in this document, for example what you need to hand in to get credit for completing the lab! Also in Handouts, you will find:

* Data – the .csv files containing 1kcs data
* peasycam – the directory you will need to copy into your Processing Sketchbook location. Processing will create this directory when you start it up:
  + c:\Users\<username>\MyDocuments\Processing

You will need to create a subdirectory “libraries” in the above directory before moving peasycam library here.

Directions and sample programs for the lab, however, are in <http://alala.evergreen.edu/misc/processing>

* [Processinglab.html](http://alala.evergreen.edu/misc/processing/Processinglab.html) – directions for this lab
* [ProcessingOverview.pdf](http://alala.evergreen.edu/misc/processing/ProcessingOverview.pdf) – Lee’s lecture notes from Monday morning
* [labsketch.pde](http://alala.evergreen.edu/misc/processing/labsketch.pde) – a sample processing program you will use to get started
* [stem.csv](http://alala.evergreen.edu/misc/processing/stem.csv) – a stem map of 1kcs tree data
* [site.csv](http://alala.evergreen.edu/misc/processing/site.csv) – information about different 1kcs site
* [species.csv](http://alala.evergreen.edu/misc/processing/species.csv) – tells you what the species codes “mean”
* [branch.csv](http://alala.evergreen.edu/misc/processing/branch.csv) – detailed branch data for 104 of the trees in stem.csv

**What do you need to turn in?**

Bring to lab next Tuesday (or even better, at the end of the lab today!) a hardcopy lab report with the (1) Processing Code (Draw Section only!) and (2) one or two views of the visualization you make with this code (e.g., use printscreen and crop in Word to get the view). Say why you like (or disklike) each visualization and what you might do differently if you had more time to work on it.

1. Draw a single tree
2. Draw three single trees from 3trees.csv
3. A Processing visualization of your own design, e.g., Tree with Branches or something other than a tree!

Please also upload your .pde (Processing programs) named OneTree, ThreeTree and CoolViz to a DIRECTORY in the program fileshare, Workspace/\_StatsLabReports/week\_8-processing/ named with your last names concatenated, e.g.,

cushingSkomraWeiss where your last names are in place of “cushingSkomraWeiss”

**Some advice from those of us who ran the lab Monday afternoon!**

You might want to play around with the original program, to get a feeling for the Processing commands you are going to use, how the coordinate system works, and using the right and left mouse buttons to rotate zoom in and out.

Data for the lab are in the program fileshare: <https://myfiles.evergreen.edu/academics/programs/cpt/Handouts/Stats/week%208%20-%20processing/data/> You will want to look at these data in Excel, and create a new (and much smaller!) csv file for the subset of data that you decide to visualize! Think carefully about selecting the trees!

Important! Units in which trees were measured differ for height and dbh, m and cm, respectively. You will need to convert dbh to meters before using it. When you get to the crown radii (note these are as N, E, S, W measurements from the base of the tree), check what units these are in!

Some useful references we found for you to use

Reference guide to processing commands: <http://processing.org/reference/>

Composing colors as rgb triples: <http://web.njit.edu/~kevin/rgb.txt.html>