Authors: MELO 3D Project Team, 2011

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Linear Regression Applet

Josh Errickson & James Henderson
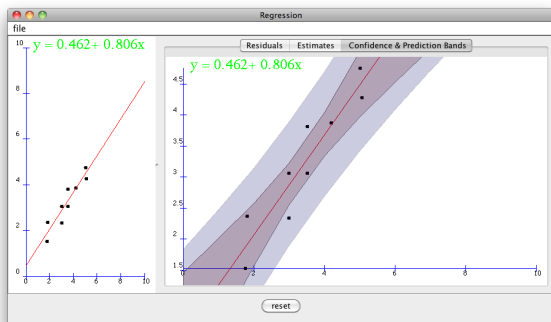
University of Michigan, Department of Statistics

June 14, 2011

Source

- Found via CAUSEweb.org, search for "Regression"
- Author: Charles Stanton, CSU San Bernardino

http://www.math.csusb.edu/faculty/stanton/probstat/regression.html

Description

- Allows creation of a scatterplot by point-and-click, and performs linear regression upon the points

- Provides numerical output, a plot of residuals and a plot of confidence & prediction interval bands (pictured)

Pros

- Very feature filled, covers most of the core ideas of Regression, for example
    - confidence & prediction bands
    - standard numeric output
- Very interactive
    - Easy to input data and make minor modifications/corrections
- Low learning curve for usage
- A very visual learning style
- Well-suited to build multiple learning activities focused on regression, e.g. effects of outliers, visualization of confidence & prediction intervals, strength of correlation, etc.

Cons

- Wrapper is sparse and written at a higher level than applet
- Complicated output, needs instructor guide
  - For example, the confidence & prediction intervals are not labeled, would not be immediately clear which is which
- Too many significant figures in output given the lack of precise control over point, which distracts from the big picture
- Can only add new points, can't remove or adjust existing points

Limitations

These aren't cons *per se*, more limitations for the instructor to be aware of

- Better for big picture, less so for finer details such as calculations or inference
- Each plot is on a different scale, making side-by-side comparisons less intuitive
- Default frame is Residual Plot which may not be as intuitive for students
- As always, the choice of notation (e.g. y instead of $\hat{y}$) needs to be mentioned to students