CogSci 109: Lecture 10

Tuesday Oct 24, 2006

Linear Interpolation, Bilinear Interpolation, Trilinear interpolation, Spherical linear interpolation, Splines, Lagrange

Announcements

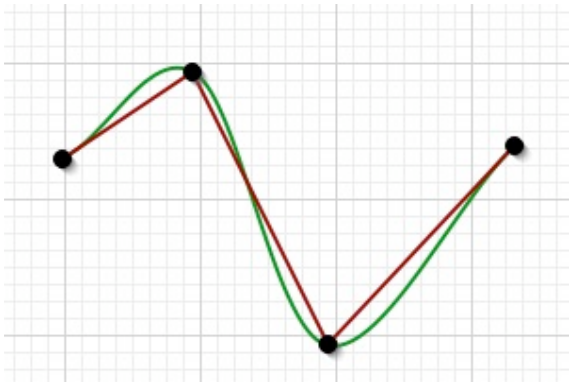
- Midterm next Thursday for those who missed the announcement
  - There will be a review session, practice midterm with solutions, listing of matlab commands, and topics to review
  - Part mult choice part short answer
  - More conceptual than computational, though there may be some small computation
  - Midterm will cover material up to the end of this week, but not material from Tuesday
- Handout for linear least squares, more on the way
- Homework to be posted, will be due Monday or Tuesday (Discussion)
- Survey of class to gather real data to analyze

A couple of clarifications

- About correlation coefficient question
- Matlab example in handout
- Linking between what's lectured in class and how to do it
  - Practice is the best way to learn this
  - If you are vague about something, try to do it then it will be more clear

Interpolation

- The process of ‘reading between the lines’ of data
- Fitting a (usually smooth) curve to a limited set of data



2 classes of interpolation

- Find a curve that passes through ALL the data points exactly
  - One way to supersample
  - Useful for creating curves from minimal data (extrapolation)
- Find a curve that fits as closely as possible to the points
  - Useful in cases where there is uncertainty associated with the data
  - We already know this type - least squares is a common example!!!

Some of the types of interpolation

- Today we'll see
  - LERP (linear interpolation)
  - BERP (Bilinear interpolation)
  - TERP (Trilinear interpolation)
  - SLERP (Spherical linear interpolation)
- Next time
  - Lagrange
  - Splines