Some applications of regression and neighbors
Principle: Nearest Neighbors

- (x, ?)
  - Find nearest neighbor (x_n, y_n)
  - report y_n
- Applications
  - classification
  - regression
- Advantages
  - startlingly accurate with enough data
  - easy, even in cases that might look hard
- Disadvantages
  - you have to be able to find the nearest neighbor
Texture scandals!!
Bush campaign digitally altered TV ad

President Bush’s campaign acknowledged Thursday that it had digitally altered a photo that appeared in a national cable television commercial. In the photo, a handful of soldiers were multiplied many times.

This section shows a sampling of the duplication of soldiers.

Original photograph
Texture Synthesis

Efros & Leung ICCV99
How to paint this pixel?

Input texture
Growing Regions
Hole Filling

Efros & Leung ICCV99
Hole Filling

Efros & Leung ICCV99
Image Analogies

Hertzman. Jacobs. Oliver. Curless. and Salesin. SIGGRAPH01
Training

Unfiltered source \((A)\)  

Filtered source \((A')\)
Texture by Numbers

Unfiltered source ($A$)

Filtered source ($A'$)

Unfiltered ($B$)

Filtered ($B'$)
Colorization

Unfiltered source (A)  Filtered source (A’)

Unfiltered target (B)  Filtered target (B’)

Hertzman. Jacobs. Oliver. Curless. and Salesin. SIGGRAPH01
Super-resolution

Hertzman. Jacobs. Oliver. Curless. and Salesin. SIGGRAPH01
Super-resolution (result!)

Hertzman, Jacobs, Oliver, Curless, and Salesin. SIGGRAPH01
Training images