



## Project Overview

- Using a large training database, apply an example-based approach to problems of image and shape synthesis.

- Potential applications:

- Video image super-resolution: estimating missing high-resolution details, given a low-resolution video input.
- Computer vision shape reconstruction: estimating a high-resolution shape, given a high-resolution image and a low-resolution initial shape estimate.
- Animation synthesis: control the displayed images of one person (A) using a camera monitoring a second person (B). B makes A move the way B did.





## Progress Through December 2001

(Joined NTT-MIT collaboration on November 1, 2001)

- Trained student about existing super-resolution algorithms and software. Made initial studies on extending still-image work to video sequences.
- Met with Dr. Ogura, Head of Human Communication Laboratory. Learned of mutual interest in shape reconstruction.
- Found MIT student to work on example-based shape reconstruction problem.



## Research Plan for the Next Six Months

- Video image super-resolution (student: Russell)
  - Include temporal consistency constraints
  - Integrate motion estimation algorithm
  - Generalize image patch data to spatio-temporal patches.
- Example-based shape reconstruction (student: Gilja)
  - Experimentation with synthetic images and shapes.
  - Application to computer vision stereo reconstruction algorithm output.
- Animation synthesis:
  - Find appropriate MIT student
  - Learn probabilistic model of output character from training examples.