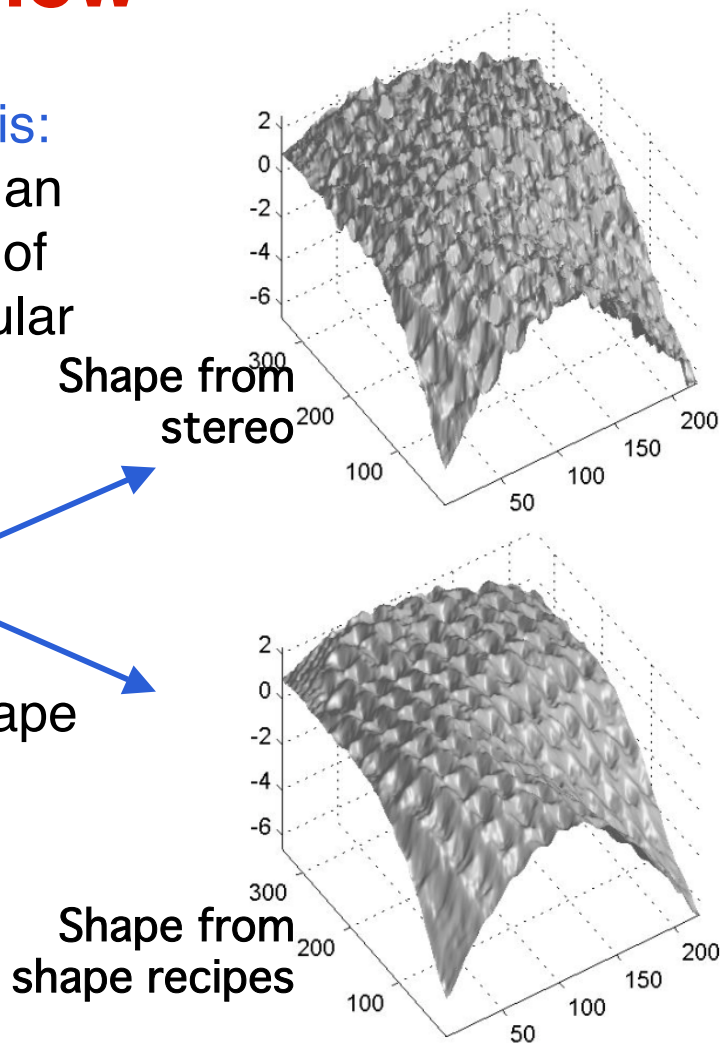
William T. Freeman

Project Overview

- Part I, Example-Based Image Synthesis: Using a large training database, apply an example-based approach to problems of image and shape synthesis. Of particular interest: texture synthesis and image super-resolution.
- Part II, Shape Recipes: a method for improved 3-d shape estimation by learning transformations between bandpassed images and shapes. (Shape estimation is a common interest we discovered through our meetings together, spring and summer 2002.)



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Progress Through June 2002

- Part I, Example-Based Image Synthesis:
  - Possible application of example-based texture-synthesis algorithm identified by Sato-san and Onozawa-san for synthetic display project. Computer code to be delivered by Prof. Freeman after release by former lab (given to him verbally).
  - Motion-sensitive video super-resolution algorithm developed by Dr. Torralba and Mr. Russell.
- Part II, Shape Recipes:
  - Method to improve stereo or other shape estimates developed by Prof. Freeman and Dr. Torralba.
  - (a) Pre-print and (b) computer code sent to Dr. Sato of NTT.

Research Plan for the Next Six Months

- Part I, Example-Based Image Synthesis:
  - Mr. Russell will extend video super-resolution algorithm to include motion estimates from successive frames.
  - Study example-based texture synthesis method in NTT synthetic world simulations.
- Part II, Shape Recipes:
  - At MIT, we will explore properties of the shape recipes approach using computer graphics simulations.
  - We hope to use shape and image data acquired by NTT in our studies of shape recipes.
  - We hope that Sato-san from NTT can use the shape recipes code in his object shape reconstructions. We expect to collaborate on this (Sato-san visits MIT Aug. 19).