Edward H. Adelson

Project Overview

- **It is important to recognize materials – the "stuff" that objects are made of.**
- Example: a domestic robot must distinguish between a pile of sugar and a blob of cream cheese in order to clean up properly.
- Other example uses:
  - Grasping an object: is it glass, metal, or rubber?
  - Locomotion over terrain: is it icy, or snowy, or wet, or sandy?
  - Mineralogy: how to classify minerals by their appearance?
  - Medicine: is this a melanoma or a normal mole?

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Progress Through June 2002

- Reflectance Classification
  - Developed theoretical foundation for understanding how illumination statistics affect the statistics of the appearance of an object in an image
- Separating Visual Characteristics
  - Developed system that can separate visual characteristics on gray-scale images by using filters that discriminate between the appearance of shading and reflectance changes
- Developed tools to classify materials according to their auditory properties

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Research Plan for the Next Six Months

- Separating Visual Characteristics
  - Develop systems for new types of visual characteristics
  - Use real images to train systems to separate shading and reflectance
- Auditory Properties
  - Investigate which acoustical properties are most relevant for classification