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?

Progress Through December 2001

- Reflectance Classification

  – Extended reflectance estimation system to handle unknown geometry

- Separating Visual Characteristics

  – Developed system to separate image changes according to their cause

    • Can separate shape changes from reflectance changes

- Began developing tools to classify materials according to their auditory properties

Research Plan for the Next Six Months

- ## Reflectance Estimation
  - Continue work on estimation in the presence of unknown or incorrect geometry.

- ## Separating Visual Characteristics
  - Develop algorithms to distinguish shape and reflectance changes in gray-scale images.

- ## Auditory Properties
  - Train classifier to recognize materials from the sounds emitted when they are struck.