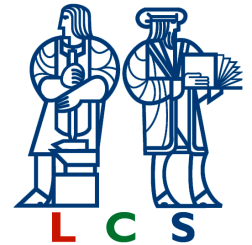


## Project Overview

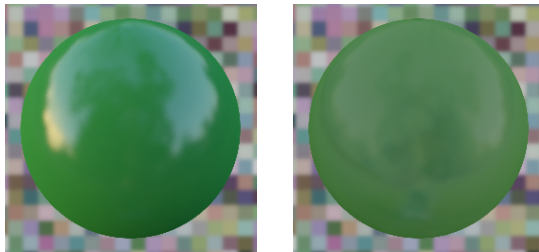
- **It is important to recognize materials -- the “stuff” that objects are made of.**
- Example: a domestic robot must distinguish between a pile of sugar and a blob of cream cheese in order to clean up properly.
- Other example uses:
  - Grasping an object: is it glass, metal, or rubber?
  - Locomotion 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?



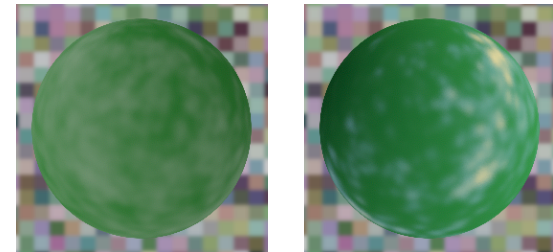
## Progress Through December 2002

- Psychophysics of Reflectance Estimation
  - Identified a number of properties of real-world illumination that are important for surface reflectance estimation (e.g. *pixel histogram skew*)

Getting rid of histogram skew makes things look *less* glossy:



Adding histogram skew makes things look *more* glossy:



- Recovering Intrinsic Images from a Single Image
  - Refined techniques for propagating information from reliable areas of the image into ambiguous areas



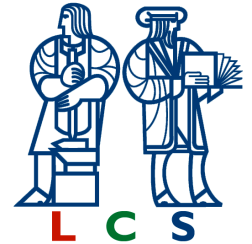
Input Image



Shading Image



Reflectance Image



## Research Plan for the Next Six Months

- **Psychophysics of Reflectance Estimation**
  - Replicate and extend our experiments with surface shapes other than spheres.
  - Perform experiments with surfaces that have empirically measured BRDFs, rather than parametric approximations.
- **Recovering Intrinsic Images from a Single Image**
  - Investigate decomposing different characteristics of the scene
  - Extend technology to computer graphics applications