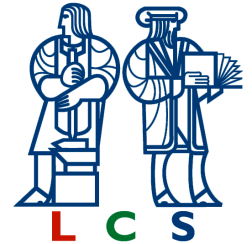


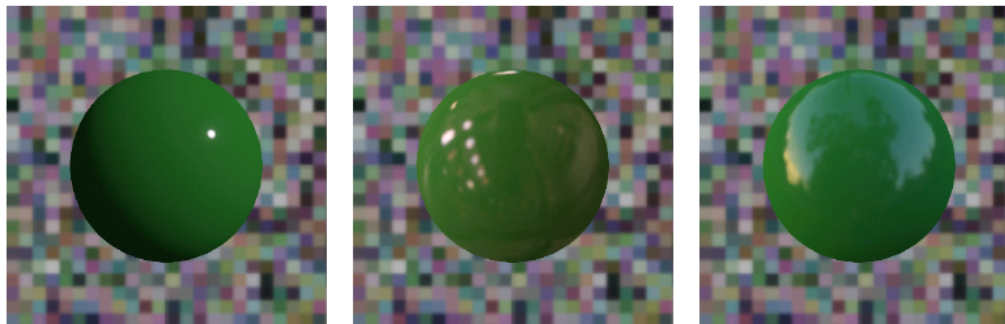
Project Overview

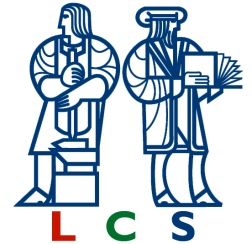
- **It is important to recognize materials -- the “stuff” that objects are made of.**
- Example: a domestic robot must distinguish between a pile of sugar and a blob of cream cheese in order to clean up properly.
- Other example uses:
 - Grasping an object: is it glass, metal, or rubber?
 - Locomotion 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 June 2001

- Computational work
 - Developed automatic method to select classification statistics.
 - Extended system to non-spherical known geometries.
- Psychophysical work
 - Performed matching experiment to test human ability to judge reflectance from a single image of an isolated sphere.
 - Complex natural illumination improves human performance.





Research Plan for the Next Six Months

- Computational work
 - Extend reflectance estimation system to handle unknown geometry.
 - Develop analytical statistical foundation for reflectance estimation.
- Psychophysical work
 - Conduct experiments to determine *how* humans estimate reflectance.
 - Extend psychophysical experiments to investigate other material properties.