

# Research Seminar



## **A Dictionary-based Approach for Estimating Shape and Spatially-Varying Reflectance**

**Zhuo Hui | Carnegie Mellon University**

Tues. Apr. 14th, 2015 | 12:00-1:00 PM | Hamerschlag Hall D210

### **Seminar abstract:**

We present a technique for estimating the shape and reflectance of an object in terms of its surface normals and spatially-varying BRDF. We assume that multiple images of the object are obtained under fixed view-point and varying illumination, i.e., the setting of photometric stereo. Assuming that the BRDF at each pixel lies in the non-negative span of a known BRDF dictionary, we derive a per-pixel surface normal and BRDF estimation framework that requires neither iterative optimization techniques nor careful initialization, both of which are endemic to most state-of-the-art techniques. We showcase the performance of our technique on a wide range of simulated and real scenes where we outperform competing methods.

### Seminar Committee:

Pulkit Grover  
Marija Ilic  
Soumya Kar  
José Moura  
Rohti Negi

### Student Coordinators:

June Zhang  
Jonathan Mei