

# COMP30019 Graphics and Interaction

## Radiosity & Global Illumination

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# Lecture outline

Radiosity

## *What alternatives are there to the rendering pipeline approach?*

Aim: understand the computational implications of ray tracing and the radiance illumination model.

Reading:

- ▶ 13.4 Radiosity Methods (Foley)
- ▶ 11.5 Radiosity (Angel)



## Recall—Phong illumination model & specular reflection

$$I_\lambda = I_{a\lambda}k_aO_{d\lambda} + f_{att}I_{p\lambda}[k_dO_{d\lambda}\cos\theta + W(\theta)\cos^n\alpha]$$

$$I_\lambda = I_{a\lambda}k_aO_{d\lambda} + f_{att}I_{p\lambda}[k_dO_{d\lambda}(\bar{N}\cdot\bar{L}) + k_s(\bar{R}\cdot\bar{V})^n]$$

where  $I_{a\lambda}$  is the ambient light (as a function of wavelength),  $I_{p\lambda}$  is the point light source,  $O_{d\lambda}$  is objects diffuse colour,  $W(\theta)$  is the fraction of specularly reflected light,  $k_d$  is the diffuse-reflection coefficient,  $k_s$  is the specular reflection coefficient,  $n$  is the specular-reflection exponent and  $f_{att}$  is the light source attenuation factor (a function of distance).

