Westfälische Hochschule
Gelsenkirchen Bocholt Recklinghausen

Computergrafik

Beleuchtung

Phong und Blinn-Phong

Prof. Dr. Tom Vierjahn

Visual Computing (https://vc.w-hs.de)
Fachbereich Wirtschaft und Informationstechnik
Campus Bocholt

Sommersemester 2020

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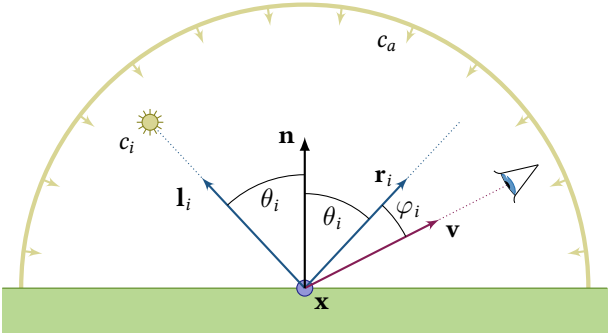
Phong-Beleuchtungsmodell[1]

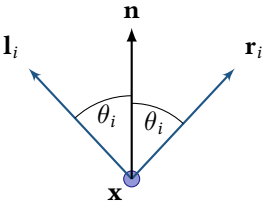
$$c_{\mathbf{x}} = k_a c_a + \sum_i k_d c_i \max(0, \mathbf{n} \cdot \mathbf{l}_i)$$

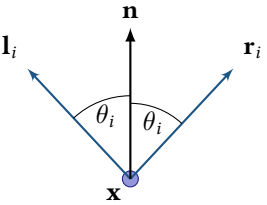


k_a:
k_d:
k_s:
p:
c_a:
c_i:
$\mathbf{l}_i$:
$\mathbf{r}_i$:
$\mathbf{v}$:
$c_{\mathbf{x}}$:

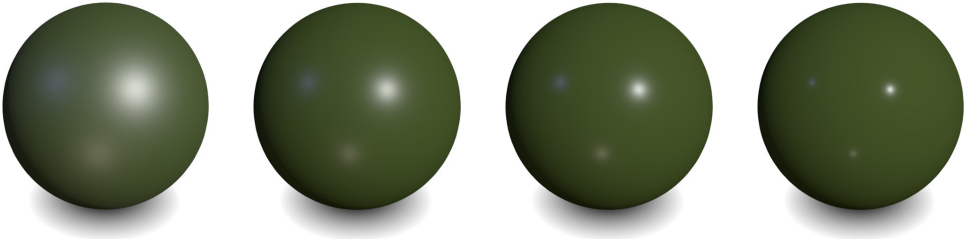
[1] Bui Tuong Phong: Illumination for computer generated pictures. In Commun. ACM, 18(6). 1975.

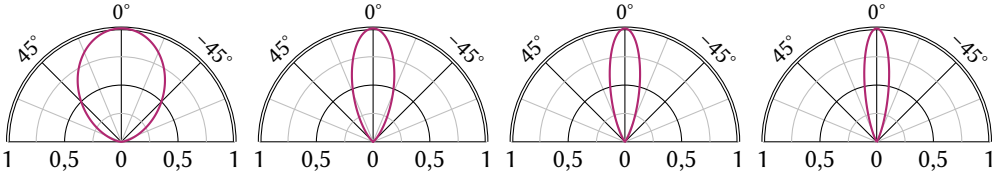
Reflexionsvektor





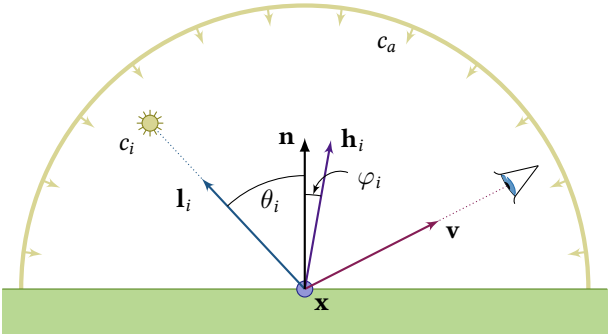
Phong-Exponent





Blinn-Phong-Beleuchtungsmodell[2]

$$c_{\mathbf{x}} = k_a c_a + \sum_i k_d c_i \max(0, \mathbf{n} \cdot \mathbf{l}_i) + k_s c_i$$



k_a:
k_d:
k_s:
p:
c_a:
c_i:
$\mathbf{l}_i$:
$\mathbf{h}_i$:
$\mathbf{v}$:
$c_{\mathbf{x}}$:

$$\mathbf{h}_i = \frac{\mathbf{v} + \mathbf{l}_i}{\|\mathbf{v} + \mathbf{l}_i\|}$$

[2] James F. Blinn: Models of Light Reflection for Computer Synthesized Pictures. In SIGGRAPH Comput. Graph. 11(2). 1977.

Zusammenfassung

- Phong
- Reflexionsvektor
- Phong-Exponent
- Blinn-Phong

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Visual Computing

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