

CG Programming II (VGP 352)

- ◆ Agenda:
 - ◆ Pretest for final
 - ◆ The pretest *is* graded.
 - ◆ Some of these questions will appear on the final.
 - ◆ Work on term project

Pretest questions & answers

1. The typical notation for a BRDF is $f(\omega_i, \omega_o)$. What does ω_i represent? What does ω_o represent?

Pretest questions & answers

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ω_i represents the direction of the incoming light, and ω_o represents the direction of the outgoing light.

Pretest questions & answers

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Measured.

Pretest questions & answers

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Dielectric or non-conducting materials. Plastic, glass, paint, wood, etc.

Pretest questions & answers

4. In a surface with a strong Fresnel factor, what happens as $v \cdot h$ approaches zero?

Pretest questions & answers

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The specular factor decreases and the surface becomes more diffuse.

Pretest questions & answers

5. What is the underlying theoretic basis of the Cook-Torrance BRDF?

Pretest questions & answers

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Surfaces are made of tiny microfacets, each of which is too small to see. These microfacets scatter light in different directions and shadow each other.

Pretest questions & answers

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Pretest questions & answers

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D represents the distribution of microfacet normal *directions*. G represents the surface self-shadowing or *geometry* factor.

Pretest questions & answers

7. What is the underlying theoretic basis of the Lafortune BRDF?

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Complex reflection lobes can be approximated using multiple cosine lobes. Each cosine lobe uses a different transformed reflection vector.

Pretest questions & answers

8. What is anisotropy?

Pretest questions & answers

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Being directionally dependent. An anisotropic surface may appear different or have different characteristics when viewed from different directions.

Pretest questions & answers

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Pretest questions & answers

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The surface tangent.

Pretest questions & answers

10. Given the following made up BRDF, which parameters control the anisotropy? In this equation, ω_o' is the projection of ω_o onto the plane formed by T and B.

$$f(\omega_o, \omega_i) = (N \cdot H)^{k(\omega_o' \cdot T) + j(\omega_o' \cdot B)}$$

Pretest questions & answers

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$$f(\omega_o, \omega_i) = (N \cdot H)^{k(\omega_o' \cdot T) + j(\omega_o' \cdot B)}$$

j and k.

Pretest questions & answers

11. What happens when the anisotropy parameters are equal?

Pretest questions & answers

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The surface appears isotropic.

Pretest questions & answers

12. Pick one of the parameters that controls the anisotropy and describe what happens when its value is larger than the value of the other parameter.

Pretest questions & answers

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If k is larger than j , the specular highlight will be smaller / sharper in the direction of T .

Questions?

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