CSC320: Introduction to Visual Computing

Michael Guerzhoy (pronounced guer-JOY, but call me Michael)

Course website: http://www.cs.toronto.edu/~guerzhoy/320/

Today

Introductions
Pop quiz
Comparing images to each other
A bit about me
Depicting Our World: The Beginning

Prehistoric Painting, Lascaux Cave, France
~ 13,000 -- 15,000 B.C. (Aurochs, dun horses, deer.)
The Empress Theodora with her court.
Ravenna, St. Vitale 6th c.
Depicting Our World: Renaissance

Piero della Francesca,
The Flagellation (c.1469)
Depicting Our World: Toward Perfection

Jan van Eyck, *The Arnolfini Marriage* (c.1434)
Depicting Our World: Toward Perfection


(Vermeer, (Rembrandt, Cravaggio?))

Lens Based Camera Obscura, 1568
Depicting Our World: Perfection!

Still Life, Louis Jaques Mande Daguerre, 1837
After realism...

Monet,
La rue Montorgueil
Depicting Our World: Ongoing Quest

Pablo Picasso

David Hockney
The Realism Spectrum

**Computer Graphics**

- easy to create new worlds
- easy to manipulate objects/viewpoint
- Very hard to look realistic

**Computational Photography**

- instantly realistic
- easy to acquire

**Photography**

- very hard to manipulate objects/viewpoint
Course Outline

• Image Processing

• Digital Effects

• Computer Vision/Image Understanding
Project 1

Images of the Russian Empire -- colorizing the Prokudin-Gorskii photo collection
Beyond (TBD)

Painterly rendering
Beyond (TBD)
Prerequisites

Must like Math!
Specifically, Calculus and Linear Algebra
Software

Python 2 with SciPy
Download Anaconda today!

Recommended IDE: IEP (Pyzo)
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## The Realism Spectrum

<table>
<thead>
<tr>
<th>Computer Graphics</th>
<th>Computational Photography</th>
<th>Photography</th>
</tr>
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</table>
| + easy to create new worlds | **Realism**  
**Manipulation**  
**Ease of capture** | + instantly realistic  
+ easy to acquire  
- very hard to manipulate objects/viewpoint |
| + easy to manipulate objects/viewpoint |             | + easy to acquire |
| - Very hard to look realistic          |             | - very hard to manipulate objects/viewpoint |
The Science of Art

http://www.dgp.toronto.edu/~hertzman/ScienceOfArt/
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