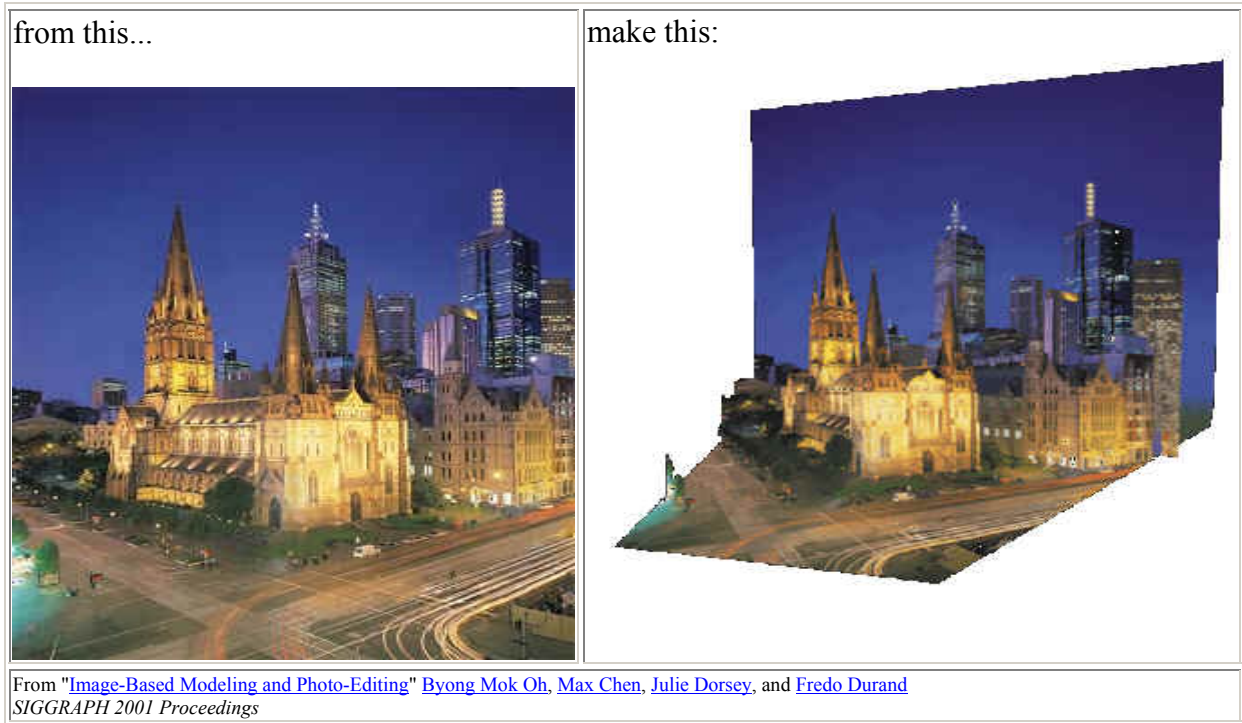


# New Course: CS-395/495 Section 25

## IBMR: Image Based Modeling and Rendering



Recent computer graphics work promotes digital images to a 'first class' primitive, to make images equally useful as both input and output. In this course we will learn about:

- Panoramic Imaging: how can we 'stitch together' overlapping photos into one continuous panorama?
- Environment Mattes: A glass-and-silver goblet reflects and distorts its surroundings in wonderful ways. How can we make a photograph of that goblet behave in the same way?
- View Interpolation: Learn how to make the Mona Lisa (in Leonardo DaVinci's painting) turn her head from side to side. How can we change camera positions long after the photo session is over?
- Plenoptic Modeling: How can we make 3D views of complicated objects without 3D shape descriptions?
- Image-Based Modeling: How a camera can measure the shape of a buttery croissant, a tiger, a cloud, a waterfall, or a flickering candle.
- Image-Based Lighting: How can we use photographs as substitutes for light sources in computer graphics renderings? Or in existing photographs? For example: can we capture dappled warm light from the forest floor and use it to light a computer-graphics dinosaur? Can we apply that lighting to a photograph of Sue, the Tyrannosaurus Rex skeleton on display at the Field Museum?
- Image-Based Rendering: How can we make new computer graphics renderings from images alone?

**Spring Quarter 2003:** Tues, Thurs 3:30-5:00pm, 1890 Maple Ave. Rm 342

**Instructor:** Jack Tumblin ( [jet@cs.northwestern.edu](mailto:jet@cs.northwestern.edu) , [www.cs.northwestern.edu/~jet](http://www.cs.northwestern.edu/~jet) )

**Prerequisites**--CS-351 Introduction to Computer Graphics, reasonable comfort with linear algebra or permission of instructor (please ask if you're interested--you can probably do it!)

**Grading:** take-home mid-term, take-home final, and one programming project built and graded at several stages. Projects will receive "Image-based grading"--let's make some interesting pictures!