Your assignment is to write a 3000-word paper exploring the state of current research in a specified area in computer graphics. You are provided with several recent conference and/or journal articles in this area, which indicate the level of resources that you are expected to use on this assignment. You must utilize at least ten such resources (including any of the provided articles that you choose to use), and you must complete each of the three phases of this assignment (all in Microsoft Word), as described below.

### Phase 1: Annotated Bibliography (50 Points. Due Date: Thursday, 2/14/2013)
This portion of the assignment will consist of a list of full bibliographic entries for at least ten resources applicable to your assigned topic, as well as double-spaced text (at least 75 words per entry) describing each entry’s relevance to your assigned topic. Only peer-reviewed articles in journals or conference proceedings are acceptable resources for this assignment.

### Phase 2: Extended Abstract (50 Points. Due Date: Tuesday, 3/26/2013)
This portion of the project will consist of a double-spaced essay (at least 600 words) summarizing the planned content of your final paper. This essay should briefly discuss the particular subtopics upon which you intend to elaborate in your final paper. (A general rule of thumb here is to have one sentence in your extended abstract for each corresponding paragraph planned for the final paper.) This paper shall be evaluated on the basis of professionalism (i.e., grammar and spelling), coherence (i.e., clarity and conciseness), and thoroughness (i.e., adequate coverage of the assigned topic).

### Phase 3: Final Research Paper (100 Points. Due Date: Thursday, 4/18/2013)
The final paper will be double-spaced and at least 3000 words in length (not counting its bibliography, which should not be annotated). This portion of the assignment shall also be evaluated with respect to professionalism, coherence, and thoroughness. Citations of referenced material should be plentiful, but extensive quotations will not be acceptable. This paper should constitute a literature survey of recent research in your assigned area of computer graphics, with an emphasis upon the breadth of approaches used by researchers, the successes that have been achieved in recent years, and the significant obstacles that researchers in this area are still confronting.

### Assigned Topics and Sample Resources

**Student:** Matthew M. McDonald  
**Topic:** Global Illumination  
**Description:** Realistically lighting elaborate scenes requires modeling both the direct illumination from the scene’s light sources and the indirect illumination that is reflected from the scene’s various surfaces. The computational complexity of the latter has resulted in a variety of approximation techniques, which attempt to balance computation time with the photorealism of the resulting images.  
**Suggested Resources:**
- Tomáš Davidovic, Jaroslav Krivánek, Milos Hasan, Philipp Slusallek, and Kavita Bala; “Combining Global and Local Virtual Lights for Detailed Glossy Illumination;” ACM Transactions on Graphics; Volume 29, Number 6; Article 143; December 2010.
- Wojciech Jarosz, Volker Schönefeld, Leif Kobbelt, and Henrik Wann Jensen; “Theory, Analysis, and Applications of 2D Global Illumination;” ACM Transactions on Graphics; Volume 31, Number 5; Article 125; August 2012.
- Sinje Thiedemann, Niklas Henrich, Thorsten Grosch, and Stefan Müller; “Voxel-Based Global Illumination;” Proceedings of the Symposium on Interactive 3D Graphics and Games (I3D 2011); San Francisco, CA; February 2011; pages 103-110.