COMPSCI 715SC 2002

Research Frontiers in Computer Graphics
Lecturer: Kevin Novins

Aims:

To identify active areas of computer graphics research.
To develop research, writing and presentation skills.
To work individually and as a group to study a few areas of graphics research in depth.

Overview:

The purpose of this section of the course is to study some of the latest research in computer graphics and to develop some of the research skills necessary to keep up with the state of the art. Since computer graphics techniques are evolving rapidly, understanding new research is usually a challenge, even for experts in the field. It is often necessary to shore up one's background knowledge before truly understanding the latest papers. Fortunately, in this case, we can pool our resources in order to accelerate the process.

This section of the course will be an exercise in student centred learning. There will be no formal lecture material. Instead, you will vote as a group to choose the areas of current research that you will be tested on in the final exam. Once the areas of study are established, each of you will identify a gap in your background knowledge that is preventing you from understanding the area. You will then perform your own research in an attempt to bridge the gap and write a tutorial on the subject that you will share with your classmates. The complete set of written tutorials should prove their value when you study for the final exam.

A number of individual and group exercises will lead up to the submission of the written tutorials. These are designed to help you in your research and to facilitate the transfer of knowledge. Both the tutorials and the lead-up exercises will be assessed.

Most people consider cutting edge research to be the most exciting aspect of computer graphics. With your participation, this will be a particularly rewarding unit of the course.

Assessment Overview

| 54% | Preparation and Participation | 9% for each week of the unit |
| 46% | Final tutorial | Due 24 October |

Assessment totals to 11% of the marks for COMPSCI715.

Lecture Session Calendar

Monday	Tuesday	Thursday
16 September Introductory Lecture	*17 September* Optional Q&A + Photos	*19 September* Poster Session and Vote
23 September No Session	*24 September* No Session	*26 September* Presentation planning session
30 September Paper Presentations	*1 October* Paper Presentations	*3 October* Paper Presentations
7 October No Session	*8 October* Optional Lecture: Sketching	*10 October* Peer Help Session
14 October No Session	*15 October* Fast Forward Session	*17 October* Demo Session
21 October Peer Reviews	*22 October* Peer Reviews	*24 October* Optional Lecture: TBA

Week One: Choice of Topic

SIGGRAPH is the premier conference in computer graphics. On 19 September, we will choose papers from SIGGRAPH 2002 that we will study for the rest of the course. Ideally, everyone would review all the SIGGRAPH papers in advance of the vote, but that would be too much work. Instead, each of you will prepare a poster describing a SIGGRAPH session that will be assigned to you. (Your session assignments are announced on the course web page.) We'll display the posters during the lecture slot and then have a vote.

Most SIGGRAPH sessions consist of four papers. For each paper in your session, you should read the abstract and conclusion and skim the contents. Don't aim for detailed understanding, but try to figure out what it's about, how interesting it would be to study, and how difficult it would be to understand in depth. Then make the same evaluations for the session as a whole.   Try to complete this task in under two hours. Your ratings will be gross estimates, but that's ok.

The goal of your poster is to give your classmates a quick impression of whether or not they'd like to study your session. Your poster can't contain very much information – your peers should be able to get its message in about a minute. Use very large type (no smaller than 28 point) so that several people can read the poster at once. Your poster should consist of at most 6 A4 pages.

Your posters must include:
- Personal Information
    - Your name and e-mail address
    - A recent digital photo of your face (If you don't have one, I can arrange to take a digital photo of you during the optional lecture session on 17 September.)
- For the session as a whole:
    - Title of session
    - Overall interest rating on a scale from 1 (boring) to 10 (extremely interesting)
    - Overall difficulty rating on a scale from 1 (very easy) to 10 (extremely difficult)
    - One to three sentences explaining how you'd feel about studying this session.
    - A reproduction of the best picture from the papers in the session. (Hint: use the Print Screen key to capture it directly from Adobe Acrobat.)
- For each paper in the session:
    - The title of paper and the author list
    - A brief description of the paper in one to three sentences. Avoid buzzwords and don't repeat the title.
    - Overall interest rating on a scale from 1 (boring) to 10 (extremely interesting)
    - Overall difficulty rating on a scale from 1 (very easy) to 10 (extremely difficult)
    -
You'll save precious time by following the format of the Microsoft Word example poster that's available on the course web page.

Submit: An electronic copy of your poster to the assignment dropbox by 10:30AM on 19 September and bring a paper copy to class on 19 September at 11:00AM - No late posters accepted

After Class:

Once we've voted to establish the SIGGRAPH session to study as a group, you will be assigned a paper from the session to study individually.   If you have preferences about which paper you'd like to study, submit them by e-mail to novins@cs.auckland.ac.nz by 6pm on Friday 20 September. My main goal will be to get an even distribution of persons and backgrounds in each group. But I will try to satisfy as many of your preferences as possible. Paper assignments will be posted to the course web page by noon on Saturday 21 September.

Week Two: Individual and Group Meetings

I will meet with each of you individually in between Monday and Wednesday to help you with your tutorial topic selection. To prepare for the meeting, read your assigned paper and note any sections that gave you difficulty. Come to the meeting with ideas about a topic for your tutorial that you think would be helpful to others in understanding this paper. We'll refine your topic together and establish some starting points for your research.

On Thursday during our normal lecture time, the you'll meet with the other students studying the same paper as you. This will be to plan the paper presentations (see Week 3).

Week Three: Group Paper Presentations

The final exam will test your knowledge of all papers that we study, not just the one that is the subject of your tutorial. In order to get everyone familiar with all the papers, each one of them will be presented in a 10-15 minute talk in class. The talks will be presented by the group of people writing tutorials for that paper.

Your group will work together to prepare your talk. The lecture session at the end of Week 2 will be used for group meetings to plan the presentation. More details about the talks and the assessment criteria will be handed out at that session. The talks will be very informal – I will try to arrange things so that preparation won't distract you from researching and writing your tutorials.

Week Four: Individual and Group Meetings

You will be expected to have made substantial progress on your tutorial by the time of your second individual meeting (7-9 October). Bring an outline of your tutorial and a list of references that you have uncovered in your research. During the meeting, we will try to resolve any difficulties that you are having. We'll also discuss the implementation part of your work, which you will demonstrate for the class in Week 5.

On Thursday during our normal lecture time, you'll again meet with the other students studying the same paper as you. This will be a chance to help each other over any difficulties that arise in understanding your topic.

Week Five: Individual Presentations and Demos

On Wednesday of this week you will be giving a one minute long presentation about your tutorial topic. The presentation will be very short, but will be expected to be extremely polished. More details will be given in Week 4.

On Thursday, we'll meet in the grad lab, and each student will show off their implementation work.

Submit: The power point slides for your presentation to assignment dropbox by 11:00AM on 14 October. No late submission accepted.

Week Six: Draft Tutorials and Peer Reviews

Before you hand in your final tutorial at the end of this week, you will hand in a complete rough draft for review by your classmates. Getting and giving reviews may help you in many ways. You may learn how better to target your tutorial for the intended audience. You may get new ideas on how to improve your own tutorial by seeing how other people presented their findings. You'll also get a start on studying for the final exam. A peer review guide will be given out in class.

Submit: An electronic copy of your complete draft to the assignment dropbox by 10:30AM on 21 October and bring two paper copies to class at 11:00AM

Final Written Tutorial

Your tutorial is to be your own work, but of course you will have to refer to other sources in learning about your topic. In order to ensure that everyone gets experience in finding library and internet sources, each tutorial must reference at least one of each. Other than that, you can use any sources you like, including discussions with teachers and classmates. Plagiarism is not acceptable. All sources must be acknowledged. All quotes and paraphrases must be cited. If you are unsure if something should be cited or how something should be cited, see Kevin.

For the study use of others, your tutorial will be placed on the course web page shortly after it is received. Further details on the criteria for the final tutorial will be given out in class.

Submit: Your complete tutorial (in a format that can be read and printed by machines in the grad lab using standard installed software) by 10:30AM on Thursday 24 October. Late penalty is 6% per day. Weekends count as one day.