



COMPSCI 715SC 2003

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 groups to study a few areas of graphics research in depth.

Overview:

The main purpose of the Research Frontiers part of the course is to help you to develop the skills necessary to keep up with the state of the art in computer graphics. The class will be divided into small groups, each of which will choose a single paper from the most recent SIGGRAPH conference to study. Each group's goal will be to understand its chosen paper in as much detail as possible. This will involve a combination of library and internet research, self teaching, and computer implementation. Each group will share their results with the class in the form of oral presentations and written reports. I will also be doing a project.

The exam will test the depth of your understanding of a paper that will be distributed to you in the final week of term.

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:

3.5 marks	Individual activities (Participation and attendance throughout)
1.0 marks	Group project selection meeting with Kevin (Week 2)
1.0 marks	Group progress meeting with Kevin (Week 3)
2.0 marks	Group preliminary presentation (Week 3)
5.0 marks	Group final written report (Week 4)
5.0 marks	Group final presentations, including final demo (Week 5)

Assessment totals to 17.5% of the marks for COMPSCI715. In cases of academic dishonesty such as cheating or plagiarism, all 17.5 marks are at risk of penalties

Lecture Session Calendar:

Monday	Tuesday	Thursday
<i>15 September</i> Introductory Lecture	<i>16 September</i> SIGGRAPH Overview	<i>18 September</i> Preliminary Paper Selections
<i>22 September</i> Optional Mini Lecture	<i>23 September</i> Optional Help Session	<i>25 September</i> No Session - Graduation
<i>29 September</i> Optional Mini Lecture	<i>30 September</i> Optional Help Session	<i>2 October</i> Preliminary Presentations
<i>6 October</i> Optional Mini Lecture	<i>7 October</i> Optional Help Session	<i>9 October</i> No Session - Projects Due
<i>13 October</i> Presentations	<i>14 October</i> Presentations	<i>16 October</i> Presentations
<i>20 October</i> Peer Reviews	<i>21 October</i> Practice Exam	<i>23 October</i> Optional Lecture: TBA

Week One: Establishment of the Groups and Exploration of Papers

During the first week, your main tasks are to form the group that you will do your project with and to identify a few papers from the SIGGRAPH 2003 conference that you might like to study in depth.

You have a choice of creating your own group or being assigned to a group. If you want to create a group, you have until midway through the session on 16 September to do so. Anyone not in a group by then will be assigned to a group. Ultimately, there will be exactly six groups of four and one group of three. If you propose a group with fewer than four people in it, that proposal is unlikely to be accepted.

Each group should pick a colour to serve as its group name and name a group “leader” who will make assignment drop box submissions on behalf of the group.

Once your group is formed, you should start exploring the SIGGRAPH proceedings, looking for papers you might want to do a project on. The SIGGRAPH papers are available in the COMPSC715 afs space, under “SIGGRAPH Papers.html”. To assist in the selection process, on 16 September I’ll also be running an automated slide presentation giving an overview of the 81 papers that you can choose from. I’ll also have printed summaries available.

By the start of the session on 18 September your group will be expected to have narrowed the choice down to between 2 and 4 papers. You will sign up for these. Be prepared to make last minute changes, as each group must sign up for at least one paper that no other group has signed up for.

At the session on 18 September there’ll also be a sign-up sheet for a 30-minute group meeting with me, which will take place during the following Monday or Tuesday.

Week Two: Topic Selection Meetings

At the beginning of this week, I’ll meet with each group to establish exactly what paper it will be studying and the general parameters of its project work. To prepare for this meeting each group is to write a one-page project proposal for each of the papers that it signed up for in the previous week. (A project proposal guide will be released in Week One.) At the meeting we’ll pick one as the group’s project, taking into account the project’s feasibility and overlap with other groups’ projects. After all groups have selected their projects, I will choose one of the unselected SIGGRAPH papers for my project.

On Monday 22 September I’ll be giving a mini-lecture on Platonic solids. Attendance is optional. On Tuesday 23 September there will be an optional help session. People who attend should be prepared to ask questions and to try to help others.

Thursday 25 September is graduation day, so there will be no session.

Submit: Group leaders to submit their groups’ one-page project proposals by 9:00am on 22 September. No late submissions accepted. Printed copies of these should also be brought to the group meetings with me.

Week Three: Project Progress Meetings and Presentations

At the beginning of this week, I’ll meet again with each group check its progress. Bring along evidence of what you’ve done thus far – lists of references, bits of code, or pictures. If anything seems to be going wrong with your project, we’ll try to fix it at these meetings.

On Monday 29 September there’ll be an optional session. I’ll be presenting my project topic and explaining my progress. (Feel free to ask me the kinds of questions that I ask you at your meetings.) This will be followed by a mini-lecture on fun things I saw at SIGGRAPH.

On Tuesday 30 September there will be another optional help session. All questions will be considered; however, since groups will be giving presentations on Thursday, I’d like to focus on giving feedback on presentation slides.

On Thursday 2 October each group will give a presentation explaining its topic and its results so far. I will also be a presenter. Each presentation will be only 3 minutes long (strictly enforced), so be efficient about how you present your material. Not all group members have to be presenters. There will be time for about 3 minutes of questions for each group.

There will be two sign up sheets available on Thursday 2 October: one for a group presentation time in Week 5 and one for a third (optional) group meeting with me in Week 4.

Submit: Project leaders to submit their groups' preliminary presentation slides by 4:00pm on 2 October.

Week Four: Project Code and Reports Due

The projects are due on Thursday this week, so all other activities are optional. On Monday there will be an optional mini lecture on my research. On Tuesday is another help session. No lecture on Thursday.

In addition to project source code, each group must complete a written report, and each student must complete a self-evaluation. Details will be provided later. Ultimately, the project code and written reports will be made available in the course's afs directory. The self-evaluations will be kept confidential.

Submit: Project leaders to submit all source code for their project and the group's written report; each student to submit a self-evaluation. These are due in the assignment drop box by 11:55am on 9 October. However, to account for minor illnesses and other small catastrophes submissions will be accepted without penalty until 5:00pm on 11 October. No submissions accepted after 5:00pm on 11 October.

Week Five: Group Presentations

Each lecture this week will be devoted to groups' presentations of their projects. Each presentation must include a demo of the groups' software. Presentations will be 10 minutes long with 5 minutes for questions.

Submit: Project leaders to submit the slides for their group's presentation to the assignment dropbox by 4:00pm on 16 October. No late submissions accepted.

Week Six: Peer Reviews and Practice Exams

On Monday 20 October I will be distributing the written project reports (including my own) among the class for peer reviews.

On Tuesday 21 October, in order to give you a sense for the style of the final exam, I'll be setting a 30-minute practice exam based on the paper that I did my project on. You may choose to study for this practice exam, but it will not be marked.

To give me a sense of what you think would constitute a fair exam, you might want to organize as a class to generate a practice exam for me on 21 October. If you do this, you'll need to agree on a SIGGRAPH paper to test me on, and notify me of your choice by the 14 October.

On the 23 October, the last day of class, there will be another optional session. The topic will be announced later.

The Final Exam:

The final exam will test your in-depth understanding of a paper to be announced after class on the 21st of October. You are expected to learn about this paper in much the same way that you learned about the papers that you studied for your projects.

There will also be a completely unfamiliar excerpt from a paper in the final exam that you'll have to analyse.