CS/SE 6301.006 Virtual Reality
Spring 2013

Project Proposal (15 points)

Assigned on Thursday, February 7
Due by Friday, March 1 at 11:59pm CDT

1 Purpose

The purpose of this assignment is for your project team to review the literature to identify the gaps in knowledge relating to your project, design a virtual reality (VR) application to address those gaps, and propose a prototype of the application that you will implement before your final project submission (due Friday, April 26 at 11:59pm CDT).

2 Assignment

You are expected to create a formal proposal document for your team project and a give an in-class presentation of that proposal.

a. Proposal Document

The formal proposal document should consist of a title, a team member list, an abstract summarizing the following sections, an introduction section motivating the high-level concepts of your VR application, a related work section that reviews the related literature and explicitly state how your application will address the gaps in knowledge, a design section that provides the low-level details of your application, a plan of action section that clearly explains what portions of the design will be prototyped and how the work will be accomplished, and finally a references section including all of the literature cited throughout your document.

The proposal document should be formatted using the IEEE Transactions on Visualization and Computer Graphics (TVCG) standard: http://www.cs.sfu.ca/~vis/Tasks/camera.html.

The abstract and introduction section should present your project's high-level concepts in language understandable to a layman. The introduction should particularly motivate why your research is important and what impact it could have. The title, team member list, abstract, and introduction should be approximately one page in TVCG format.

The related work section should review literature related to your project and explicitly state how your application will address the gaps in knowledge. This section should be a half-page to one page in TVCG format and review 15 or more credible sources. If your literature review addresses multiple areas of related research (e.g., studies involving visual fidelity, studies involving audio fidelity, studies involving visual and audio fidelity), it is recommended you use subsections to make these areas clearly distinct.

The design section should provide the low-level details of the ideal VR application you would create given more development time than a single semester. You should consider and describe the virtual environment, including specific objects, graphical effects, any 3D sounds, any event-based or time-based animations, and any simulation effects (e.g., gravity or artificial intelligence). You should also consider and describe the 3D interaction techniques that would be available to the user, such as selection, manipulation, navigation, and/or system control. For each technique, explain what it does and how the user would perform the technique using the input devices. Finally, if your application requires it, describe any menus or other non-3D methods of interaction by explaining what they do, how they will look, and how the user will interact with them. Feel free to include diagrams and images to convey your design concepts. The design section should be one to four pages in TVCG format, depending on your project and number of diagrams used.

The plan of action section should clearly explain what portions of the design you will prototype for the team project and how the work will be accomplished. You should explicitly state whether you will be using the arMasterSlave framework or the arDistSceneGraph framework to implement your application. You should provide a list for each of the following application aspects: graphical assets that need to be modeled, sounds that need to be recorded, animations to be programmed, simulation effects to be developed, interaction techniques to be programmed, and other miscellaneous elements. Finally, you should provide a Gantt chart (http://en.wikipedia.org/wiki/Gantt_chart) detailing how long you expect each task to take and how the tasks will be assigned among the team members. **Your final project submission will be graded based on this section, so give it careful consideration.** The plan of action section should be one to two pages in TVCG format.

The references section should provide references for all literature cited within the proposal document.

b. Proposal Presentation

In addition to the formal proposal document, you are expected to create a Powerpoint or Prezi presentation to summarize your proposal. You will have approximately 15 minutes in class to provide this presentation as a team. The presentation should motivate your research (2-3 minutes), briefly review related work (3-4 minutes), briefly describe your design (6-8 minutes), and explain your plan of action (3-5 minutes).

3 Submission

You are expected to submit your homework through eLearning by the deadline indicated above. Your submission must be a zip file (.zip); not a .tar, .gz, .rar, .7z, or any other type of compressed file. Use your team number to name your zip file (e.g., "Team 5.zip"). Your zip file should include the following contents:

- Proposal document. Acceptable formats: .pdf, .docx, .doc.
- Proposal presentation. Acceptable formats: .pptx, ppt, or a portable Prezi.

Each team member is required to submit the zip file, in the event of disputed proposals.

4 Presentation

As part of this assignment, you are expected to give an in-class presentation of your team proposal. In-class presentations will occur March 5th and 7th. If you expect to be absent any of these days, you must notify the instructor before the deadline indicated above. For the presentation, you will have approximately 15 minutes to present your proposal as a team, followed by 10 minutes of questions and answers from the rest of the class. You should bring your own laptop for the in-class presentation. If your team cannot bring a laptop, notify the instructor before the deadline indicated above.

5 Grading

Your grade for this assignment will start at 15 points. For each criterion your team fails to meet below, your grade will be reduced by the indicated deduction until 0 points remain.

(2 points): The introduction section motivates your research beyond the provided project description.

(5 points): The related work section sufficiently reviews related literature, identifies the gaps in knowledge, and explains how your research will address those gaps.

(4 points): The design section clearly covers the low-level details of your ideal VR application, including the environment, 3D interaction techniques, and other elements.

(3 points): The plan of action section clearly explains the scope of the project and how the work will be accomplished, including a Gantt chart.

(1 point): The presentation efficiently summarizes the proposal document in 15 minutes.

(15 points): You submit your proposal through eLearning by the deadline indicated above.

(5 points): Your proposal document is properly formatted by TVCG standards.

(15 points): Your team provides an in-class presentation of your proposal.

6 Academic Integrity

This is a team assignment. Teams are expected to submit their own work.