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## RESEARCH PLAN

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**CGT 411/450**

**Research Plan Worksheet for Group AViRT**

**1. Research goal, research question or hypothesis:**

How does an affordable, mobile and real-time pre-visualization application enhance the film productions of indie directors?

**2. Identify the concepts from your research question that you want to assess with your research:**

- ❖ User interface design
- ❖ User experience testing
- ❖ Interactivity with a green screen and chroma-keying
- ❖ Use of virtual environments by indie directors
- ❖ Use of mobile device as a pre-visualization platform
- ❖ Optimization of application
- ❖ Approximate budget available

**3. How can you actually capture or measure each concept? Are there published questionnaires (aka research instruments) that you can use or do you have to create your own?**

We will be creating our own questionnaire since there are no published questionnaires on this topic in particular. We will be measuring our qualitative research based on the observations that we take during the experiment process. We will be performing a cognitive walkthrough for our experiments, and we will be recording the subject during the experiment for later analysis. Our metrics will be time on task (how long the user spends on each task), complexity of task (how many clicks or actions it takes to complete a task and degree of cognitive leaps), the success rate of each task, and the error rate of each task. Most of our experimentation will occur during the cognitive walkthrough phase except for the optimization of the application, which will be tested using frame rate updates during development.

**4. What procedures can you use to collect data that captures each concept you want to assess?**

We will be able to measure our qualitative results by asking two questions at each user action, described as the Streamlined Cognitive Walkthrough Technique: "Will the user know what to do at this step?" and "If the user does the right thing, will they know that they did the right thing, and are making progress towards their goal?" The four tasks we will ask the subject to complete during the experiment are as follows: Load a virtual set that we have pre-installed into the application, display the actor in the virtual environment, alter the perspective of the subject within the virtual environment, and finally actually filming the subject on set using standard filming techniques without using our application. We will also be able to gather quantitative data by creating our own 10-question questionnaire that we will give the subject at the end of the cognitive walkthrough process.

**5. Who are the people or items you will collect data from? How will you select them (sampling)?**

We will be collecting data from indie directors. We will select students from the Film and Video Studies department at Purdue. These students will have a better idea on cinematic techniques and the directing process, which we will be able to observe. We want to avoid using students from the Computer Graphics Technology department as these students will have a better idea on how visual effects and virtual environments work. We want to see the perspective of the director rather than the visual effects specialist. We will pull from the Film and Video Studies listserv and use the willing participants as our sample from the total population.

**6. How will you evaluate your project with regard to your problem statement and research question?**

We will consider our project a success based off the feedback of our subjects. If our subjects are able to perform the tasks presented to them at the research phase, we will know our application is a success. If the users are unable to complete the task, there is some fundamental error to our design that will need to be addressed. Based on the results and answers of our questionnaire, we will be able to determine the answer to our research question. If our application is able to enhance the filmmaking process for directors by giving a pre-visualization tool for virtual production, our project will be a considered a success.

**7. How will you analyze the data you collected?**

We will use the answers from our questionnaires as data for analysis. We will perform a statistical analysis to measure the data we receive to interpret our results. We will be able to analyze the success of our application based on how often specific tasks were completed or not completed during the cognitive walkthrough phase.

**8. How will you present the results of your analyses? How will you organize them?**

Using this information we will construct graphs to help visualize the statistical data. Our charts will display the results of the metrics we want to use for each task. We will graphically display time on task, complexity of task, errors during tasks, and the success rate during the tasks. We will also display graphical information we receive from the questionnaire to visualize the feedback from our subjects.

**9. Other notes, questions, to-do and to-read items:**

We will be formulating our questionnaire according to best practices as described by the IRB (institutional review board). We want to follow ethical methods and develop questions that will give us useful data to analyze. Since we are analyzing humans, we will want to become certified by the IRB in terms of behavioral research involving humans.