Project Proposal

The goal of this project is to create a program which generates both images and sound based on the movements of a dancer. The project will utilize tools at the Center for Collaborative Arts and Media (CCAM) and will hopefully culminate in a performance. Professor Holly Rushmeier will advise the project, and Art Professor Johannes DeYoung will serve as a resource to help me understand the tools available.

The project will use the new installed 20-camera Vicon Shogun motion capture system at the CCAM. Though I am just becoming familiar with the tool, I am auditing Professor DeYoung’s “Research in Motion” class on Friday mornings to learn more about the field and develop a network of peers who are also equipped to use it. There will also be open hours each week before class for me to test out the system, and I will be able to reserve the room on my own for the project.

As stated previously, the tool will generate both sound and images. I am open to different ideas for what these images look like. My idea is that they would emulate the strokes created by the dancer’s limbs, following the lines drawn by the hands and feet. I would also be interested in creating images that appear to be interacting with the dancer; an abstract figure that almost functions as another dancer in the space. These graphics will most likely be 2-dimensional and would be projected onto the walls of the CCAM studio. I hope both the images and the sound
will appear to react to the mood created by the dancer, which is dictated by the speed and acceleration of movement.

The sound created will be music that fits the mood established by the figure and reacts to different types and speeds of movement. The Mo-cap system generates data on the acceleration and momentum of the body, which can be used to create this effect. Though the Vicon system is new to Yale, the CCAM hopes to build a database of movement from its various users, which would be an excellent resource for training and testing my tool.

In addition to the aforementioned hardware, I will use software that allows for sound and image generation. On the sound side, I will probably use SuperCollider, Haskell, or another related tool. On the image side, I will likely use Maya. I am, however, inclined to use whichever tools the Professors Rushmeier and DeYoung are most comfortable with, as that would make it easier for me to get help with the project. With that said, I am open to using software other than the languages I mentioned above.

Finally I must consider what the end product(s) of this project will be. As I stated earlier, I am hoping the project will culminate in a performance, though I understand that it could be challenging to fit an audience into the CCAM’s studio, and that the interference of other bodies in the room could both complicate the motion capture and obstruct the generated graphics. That said, if the performance works out, I would also like to give the public an opportunity to interact with the product. Ideally I would open with an explanation of the tool, followed by a performance, followed by open access to the dance floor/space. Lastly, I will also obviously provide the written report required for the project as well as my code.
Timeline

- Sep. 11: Meet with Professor DeYoung to determine best tools for the project.
- Sep. 18: Write and submit proposal. Start investigating different performance venue possibilities. Gather data from the CCAM and explore how it can be manipulated and utilized.
- Sep. 25: Start investigating and playing around with sound and image generation.
- Oct. 2: Write code for sound generation.
- Oct. 9: Practice with dancers; adjust sound based on feedback.
- Oct. 23: Write code for image generation.
- Oct. 30: Practice with dancers; adjust image based on feedback.
- Nov. 6: Practice both sound and image generation with dancers. Continue refining. Pay close attention to how sound and image interact.
- Nov. 13: Working on written report.
- Nov. 27: Working on written report and presentation for performance.
- Dec. 4: Performance Week. Product should be finished and thoroughly tested. Will have at least one dress rehearsal of performance.