

Michael Giovinco

Interactive Technology, Lighting, Perception, and the Actor

Project Overview

Interactive technology has begun a sweeping sensation among different art forms. It has, in many ways, created a crossroads between the disciplines. Theatrical groups like Enra, a Japanese dance troupe, have begun using advanced video tracking software and projectors to have the dancers control the environment around them with their movement. Many groups use varying forms of motion tracking to nail down lighting cues, to control projected images, to warp sound effects, and more. This list is growing every day.

It is exciting. It is an exciting moment for the designer of a show, but it is even more exciting for the actor. With this technology, the actor can surpass many restrictions of the world created by the designers because their actions will directly influence the world that is being created in real time around them. Their characters are no longer part of a story being told, but part of a story being lived, and that is fantastic.

There are a few problems though. Actors have their work cut out for them in just existing within the world created by the designers. To then have to be able to mend the world that they exist in is a very difficult task that needs immense training. Another problem lies in the obstacles that different types of motion tracking can cause. Cameras need to be recalibrated. This prolongs tech and can become temperamental in use. Wearable motion trackers are much better for a show that is on the run, but are often visible if not worked into the costumes. Additionally, tracking a large cast can become cumbersome in price. Finally, when working with this technology, projections are often used in place of light because of the channel limitations of theaters, but projections can create further obstacles for a lighting designer.

The project I propose involves working with existing technology to tackle these challenges. I plan to invest in the Myo and the Kinect, products that have proven to be affordable and accurate devices for motion tracking and video tracking. With these I would mount at least four small test projects throughout the year that would allow me to test these devices and to compare the limitations of these products in terms of usage, time, and effectiveness. My primary focus will lay in controlling lighting cues with this technology. I want to amplify what we can do with this software beyond just the timing of a cue to also controlling the intensity of lights. Because an actor learns how to use a prop in a show with a rehearsal prop, I will work on a way to have rehearsal technology so that an actor can begin understanding what their movement can cause well before tech week begins. I will also study how we perceive movement so that I can craft works that are not based off of arbitrary motions.

I think it is important to bring up that this is only phase one of a larger project. Throughout my third year, I would like to explore the possibilities of this technology and then follow up in my fourth year by putting on a full scale musical that would explore perception through this technology and act as an exploration of how to create a world while acting in another. You can think of the third year award to be a beta test that I would hope to build upon in my fourth year through a second round of the Arts Award.

After spending a semester in Lighting Technology and another in Lighting Design with Lee Kennedy as well as working as a lighting shop assistant this past year, I find that this is a project that would further my education in this technology and give me a further venue to strengthen my hand at lighting design along the way. I find this to be a perfect project to accompany the independent study in Lighting Design that I will take with professor Kennedy in the Fall of 2015 and the work I will continue to do beyond that.

Locations

I plan to work on this project using the lighting lab located in the Culbreth Theater trap in conjunction with resources that are offered in the Digital Media Lab on grounds. With the upcoming position of the New Media Professor in the Drama Department, I plan to find time to explore the space and technology that this professor will use to teach their students. When the space is available, I would like to use the Helms Theater for short periods of time to lab my small projects. The time in the theater would act similarly to how the space is used in the Lighting Design class in the spring. It will not conflict with any shows that would be housed in the theater.

Concerns

My major concern is that I have not personally learned how to program in this fashion before. While my plans for next semester involve taking a class on programming as well as learning how to program the different light boards in our theaters, it will take a lot of figuring out to get from point A to point B. While this is a concern, I am confident that I can learn the process to achieve my goals and I have a few computer science and engineering students who would be interested in helping me in that part of the process as well as many resources on grounds to go to for guidance.

Outcome Report

I plan on presenting the information that I will have gathered from my small projects as well as the process in which I have decided to go about using the equipment at the Outcome Report Presentations. Ultimately, I would like to be able to show a live experience of how the different equipment would work, whether with actual lighting in a theater space or through a computer simulated version if the presentation is not in a theater space like the Helms to which I would have access.

Project Time Line

- **Summer 2015**
 - Purchase the Myos, the Kinect, and download any software that I will need on my computer.
 - Conduct research on how to use software to get from the tracking devices to the computer.
 - Conduct research to get from the software on the computer to a light board.
 - Physically set up and practice ways of reading the motion so that I will be ready to make the jump to lights when school starts.

- **Fall 2015**
 - Purchase any materials on which I may need to run experiments in a light lab.
 - Plan the first 2 small projects, the first of which to occur before the Helms will be in use for the *Sweetest Swing in Baseball* and the second to occur at some point afterwards.
 - Create the design for the two small projects.
 - Practice running from the computer to the lighting in the light lab.
 - Practice running from the motion tracking to the computer and then to the lighting in the light lab.
 - Physically execute both small projects.
 - Invite other students and professors to view the small project showings and gain feedback on what they observe and present information.
 - Write out a report on the research that came out of the two small projects.
 - Present research at functions at Open Grounds.

- **Spring 2016**
 - Plan the latter 2 or more projects, the first of which to occur before the Helms will be in use for *The Arctic Circle* and the second to occur at some point afterwards.
 - Create the design for the two small projects.
 - Practice running from the computer to the lighting in the light lab.
 - Practice running from the motion tracking to the computer and then to the lighting in the light lab.
 - Physically execute both small projects (or more).
 - Invite other students and professors to view the small project showings and gain feedback on what they observe and present information.
 - Write out a report on the research that came out of the projects
 - Present research at functions at Open Grounds.

Budget

Item	Quantity	List Price*	Tax**	Shipping***	Cost
Myo arm band	2	\$199.99	\$28.00	Free w/ Prime	\$455.98
Xbox One Kinect	2	\$149.96	\$10.50	Free w/ Prime	\$320.92
OSCulator 2	1	\$20.00	\$1.40	Download	\$21.40
4'x25' Scrim	1	\$127.50	None	Free	\$127.50
Applied NN 8" Lite Duty Tri- Truss 5ft	2	\$173.16	None	\$20.71	\$387.74
Miscellaneous Cables and supplies****					\$76.46
Total					\$1,400.00

* Price listed online by top providers.

** As notated online per site.

***As notated online, my Amazon Prime account will allow free shipping for certain software.

**** Any cables that I cannot use from the lighting shop in the Drama Department will take priority. Otherwise any extra money from the budget will go towards supplies that I can test the lights on.

My main priority in my budget is the technology that will allow me to achieve my research, such as the Myo, Xbox One Kinects, and OSCulator 2.

The scrim is a material that I know will prove very useful in my test runs and is a fabric that I am very interested in using for the expanded project as it can have multiple uses in performance and lighting.

The two trusses that I account for will be used as mounting devices for lights in some cases and ways to mount the scrim in other cases. I am interested in exploring trusses as transformable set pieces in the expanded project.

In the creative process of my small projects, I will undoubtedly sprout an idea for various other supplies. This I know will not be supported by my budget. Any supplies that I may foresee needing at that point I will pay out of pocket if I cannot find access to them from the department for this research. To find the funds to purchase this equipment, I may decide to crowd source online as there has been great success on sites like indiegogo.com and kickstarter.com for projects with interactive technology.