

Purpose:

The purpose of the first half research is the similar to the purpose of my last URECA grant; Body Forms: 3D Scanning/Printing. The project explored what the fashion industry would be able to do with new technologies. In this case, taking a 3D body scan to augmented/virtual reality as another option for fashion industries to use. This also explores the beginnings of shortening the 1D to 3D process that fashion industries utilize to create garments that will ultimately give consumers a better fit. (Cottle, 2012; Cottle, Ulrich, & Teel, 2014).

The second half was of my URECA project new, and it was about exploring what the effects could be if these new technologies were implemented. Specifically, to help figure out and give others who research about/around this subject how to negate any negative effects. To achieve this, I wrote an autoethnography detailing times within the 3D body scanner, and going back through my life experiences to explain the reactions that I had. The definition of an autoethnography is “an approach to research and writing that seeks to describe and systematically analyze personal experience in order to understand cultural experience” (Ellis, Adams, & Bochner 2010).

In both parts of the research I utilized myself as the sole participant to eliminate risk to any others based on my past reactions.

Augmented Reality (Left) and Virtual Reality (Right) Headsets



Body Forms: Augmented/Virtual Reality and AutoEthnography

3D Body Scan to Virtual Reality:

To get a 3D body scan to augmented/virtual reality, I had to first body scan myself in the KX-16 body scanner in the LRC. In the scan, I wore my underwear, sports bra, and tank top. The body scan itself is saved as an .obj.

Next, like my last URECA grant project, I had to make my 3D body scan solid. To do this I used Meshmixer and Mudbox.

I then put this body form in the Unity Engine. Unity is a type of program that is known to be used by game developers. When I open Unity, I had to create a project. For the first project, I decided to do Virtual Reality. I enabled in the project settings for the body form to be seen in virtual reality. I then loaded my body form to Scenes (inside Assets) so I could drop my body into the Display. Once it was in, I scaled my body down to be more “normal” sized (XYZ= 0.01) I also found a basic c# script to rotate my body so viewers could see all my body. I made a plane to put under my feet so it felt like my body scan was standing on something. To view my body scan in virtual reality I utilized the Oculus Rift.

C# Used to Rotate:

Source: (n.d.). Retrieved from <https://www.youtube.com/watch?v=8J3tFepPHVA>

```
public class Rotate : MonoBehaviour
{
    public float speed = 1f;
    // Start is called before the first frame update
    void Start()
    {
    }
    // Update is called once per frame
    void Update()
    {transform.Rotate(0, 0, speed);
    }
}
```

3D Body Scan to Augmented Reality:

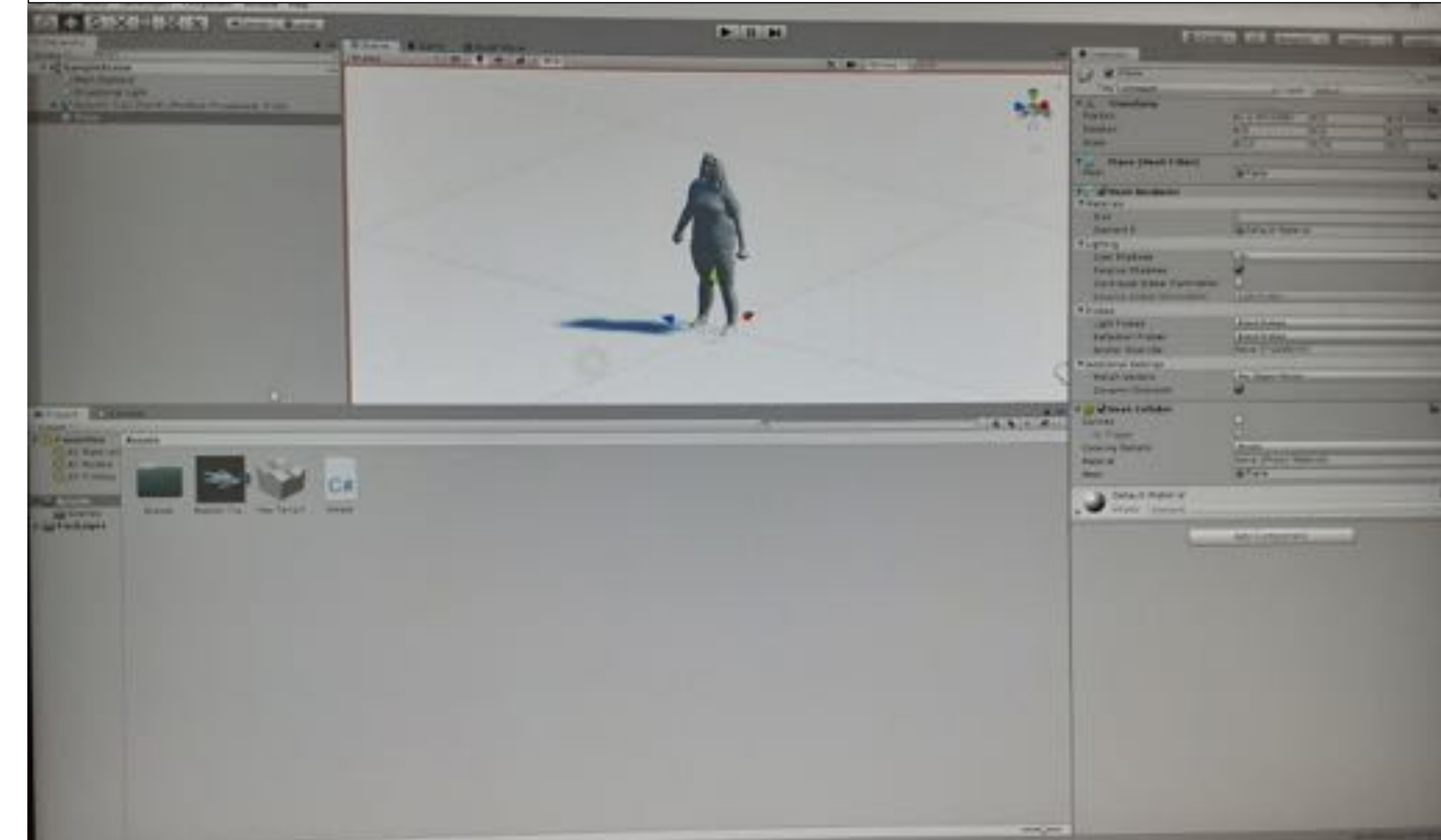
Next, getting much help from Isaac Shirk, I finally placed my body scan in augmented reality. Augmented reality is different from virtual reality because your body is placed in the real world. Augmented reality in my opinion is also trickier to work with. To create something in Augmented Reality, the Makerspace has Magic Leap. A type of headset that will let you interact with the augmented reality world.

You need to make a Magic Leap account and follow the directions of all the things you need to download with one of the most important packages being Lumin SDK (+plus more packages to make Unity and Magic Leap work together). The platform that I used was Unity. In Unity you need to make sure your project is using the Lumin SDK. You will also need to create a developer certificate also in your Magic Leap account.

When you get to Unity, and follow all the directions listed in the Magic Leap website, you will need to go to the Magic Leap tab and import support files to Unity. Next, to place my body scan to work in augmented reality, it was similar to virtual reality. Import to Scenes and place you body scan to the display screen and adjust as needed. Next under files you will then need to select build so the application that you have can work with the Magic Leap headset, and if you want your headset to be disconnected from the computer, then you need it to “build and run.”

To get it started you will open a tab in Unity to get your headset to connect with the computer and application. I had learned the hard way that to get the headset to work you will need to use the same headset that you first used, otherwise it will have hard time connecting to the ZI server.

Working in Unity For Virtual Reality



An Autoethnography of Personal 3D Body Scanner Reactions and the Reasons Behind the Responses:

Paper Abstract and Afterthoughts

“This paper explores 3D body scanning and mental/emotional issues related to body image through autoethnography. Throughout this paper, I discuss my experiences with 3D body scanning technology and how those experiences influence my self-perception. By examining these phenomena, I hope to demonstrate the effects 3D body scanning may have on women.”

This paper revealed to me the frustrations that I had throughout life that, in turn, effected how I saw my body in relation to those frustrations. From a researching perspective, it was interesting to see when these frustrations began and how it effected the way I lived my life.

I thought it prudent to write this paper because if these types of technologies came into fashion industries, I wanted other researchers to know how some consumers in the culture I live in with similar bodies to me might react. I hypothesize that there will be others like me, but it is possible to overcome any negative reactions.

Special Thanks To:

The Undergraduate Research and Creative Activity (URECA) program and my mentors Dr. Cottle and Dr. Asbury for allowing me to continue learning about research.

Benjamin Becker, Isaac Shirk, and everybody at the Makerspace who helped me learn more about Unity, virtual reality, and augmented reality.

Sources

Cottle, F. S. (2012). Statistical human body form classification: Methodology development and application (Order No. 3520497). Available from ProQuest Dissertations & Theses Global. (1033758092).

Retrieved from <https://ezproxy.mtsu.edu/login?url=https://search.proquest.com/docview/1033758092?accountid=4886>

Cottle, F. S., Ulrich, P. V., & Teel, K. P. (2014). Framework of understanding somatological constructs relative to the fit of apparel. Proceedings from the 5th International Conference on 3D Body Scanning Technologies. Lugano, Switzerland.

Ellis, C., Adams, T., & Bochner, A. (2010). Autoethnography: An Overview. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, 12(1). doi:<http://dx.doi.org/10.17169/fqs-12.1.1589>

(n.d.). Retrieved from <https://www.youtube.com/watch?v=8J3tFepPHVA>.