XR MOOC Specialization Course 2: User Experience & Interaction Design for AR/VR/MR/XR
Dr. Michael Nebeling

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Assignment 3: Physical Prototype

In this third honors track assignment, you are creating a physical prototype of the new design idea for your expedition-like XR experience. You should base it on the storyboard you previously created, but it is natural for ideas to evolve and change with prototyping. As before, you should start on paper, but then quickly become more physical, for example, using Play-Doh:

1. **Create a paper prototype of one of the key interactions**
2. **Model 2-3 main 3D characters with clay**
3. **Create a diorama with the 3D characters to define the story**
4. **Record a video and narrate the interactions**
5. **Optional: Create a 360 paper prototype to define the context**

Expected results

- Better sense of problem, context, & story
- Identify key elements: environment, 3D characters, & interactions
- Get a feel for technical requirements & digital prototyping needs

Submission

Please submit a summary of the key interactions highlighting the new idea in your physical prototypes together with the following materials (as PNG image or PDF document, optionally MP4 video) to the Physical Prototypes Gallery:

1. **Paper prototype photo**: Submit a photo of your paper prototype that clearly illustrates the main components part of a key interaction you envisioned.
2. **Diorama photo/video**: Submit a photo of your diorama with 3D characters illustrating the story. Optionally you could record a narrated video of you enacting your prototype in 3D physical space. Try to stay below two (2) minutes; the total upload limit is 50 MB.
3. **(optional) 360 paper prototype photo:** Submit a photo of your 360 prototype with using the 360 sketching template and paper cut-outs of the main 3D characters and environmental objects to define the context.

Tips

- **360 template:** You can find our 360 sketching template in the resources section.
- **360 sketch/composition:** One way to use the template is to sketch out the aspects of the environment. But you could work with paper cut-outs, which can be more intuitive. Make the paper cut-outs relatively small and still place and move them along the grid lines to experiment with different kinds of interactions in 360 degrees around the user. Again, refer to the lecture and our 360proto CHI'19 paper for more information.

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- **360/VR previews**: If you want to give the 360/VR preview tool I was using in my examples a try, you can find it here: https://xrmooc.glitch.me/camera/vr/. You need to tilt down your phone to see the camera. Tilt it up after capture to preview. Otherwise you can take a new photo after 1.5 seconds. This tool is a simplified version of the system described in our 360proto CHI'19 paper. Would be fun if you gave it a try. I tested it successfully in Chrome on Android. On iOS, you need to use Safari and you may need to enable a few flags to get it to work.
- **3D modeling:** I would suggest you use clay or you work with paper cut-outs but bring them into 3D. Feel free to use Lego if you have access to it, or repurpose existing physical objects. The main idea is to tell the story with the main characters in 3D in the physical world. With characters, I mean any objects that play a role in your envisioned interactions. Don't just think about the protagonist.
- **Demo video:** Your video should show 2-3 main 3D characters that are crucial to the story. Throughout, it is important to explore alternatives and it is good practice to document design evolution by showing previous iterations that led up to the final prototype. For the actual demo, you should rehearse a bit before you start recording it. Again, the main challenge in this assignment is to be physical, to make use of physical space. So, give it a try. Create a mini-stage out of paper or cardboard. Or work at life-size scale by appropriating physical objects. That's also allowed but pay attention to what and who you may record in video and review it critically before sharing.