

## Mixed Reality Technologies

### Problems for Lecture 1: Introduction to TouchDesigner

1. Use an LFO CHOP, a Math CHOP a "Movie File In" TOP, a Transform TOP and a Null CHOP to create a network that results in a movie of your choice being translated from side to side while it is being played. What is the purpose of the Null CHOP?
2. Make a network that imports an image file and repeatedly gradually increases the brightness of the image from 0 to 1 over a period of 360 frames. Your network should use a Movie File in TOP and a Level TOP.
3. Taking the network you created in question 2 as a starting point, add a single operator between the Movie File in TOP and the Level TOP that causes the image to rotate *clockwise* through one complete cycle every 360 frames.
4. Use an Add TOP to add the output of a Ramp TOP to the output of a Movie File In TOP. Create a Beat CHOP and use its output to control the Phase parameter of the Ramp TOP.
5. Create a network with a Render TOP, a Geometry COMP, a Light COMP and a Camera COMP. Make the viewers active on the Light and Camera COMPs. Tumble the content of these viewers to adjust the camera and light angles. What happens if the Light is coming from the bottom of the torus and the camera is looking down on the torus? Use a Python expression to rotate the camera around the torus with the light shining directly down onto the torus. Now experiment with using a Python expression that also continuously moves the light source.