

## Exercises in Kinect Programming for Computer Vision

### Exercise 1 (P) Skeleton Joint Position and Rendering

After building the project, including the updated KinectTracker library, you should already be able to use the program for showing the skeleton tracking for a user. The skeleton tracking requires a short calibration for each user. For this you should step back from the Kinect sensor and hold out your arms. The command prompt informs you about the calibration process.

For this exercise use the joint position provided by the skeleton tracking to draw a teapot at the position of the users head. You can use the `glutSolidTeapot` function to draw a simple teapot. See the `drawLimbs()` function in the source code on how to get the tracking information.

### Exercise 2 (P) Joint Orientation

The skeleton tracking provides an orientation for each joint. Apply this orientation to the teapot rendering so that the teapot changes orientation with the movement of the users head.

Beware, OpenGL uses column-major format for transformation matrices.

### Exercise 3 (P) Lighting

Create two OpenGL lights with different colors and adjust their position in the virtual scene by using the joints of the left and right arm provided from the skeleton tracking. You can use the same OpenGL material properties for both lights.

### Exercise 4 (P) OpenGL Transformations

In this exercise you should learn the basics of OpenGL transformations. Create an 'artistic' head using OpenGL transformation commands and the `glutSolid{Sphere,Torus,Cone}` functions (see example in fig. 1). Replace the teapot geometry with this new head geometry.

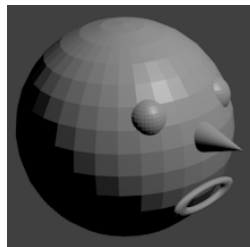


Figure 1: Example of a head from simple primitives.