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CMPEN/EE 454

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**Project 2: Camera Projection Project**

Part 1: Project Summary:

In this project we had the task to perform forward and inverse camera projection and perform all sorts of calculations along the way. The process of forward camera projection is the action of taking a 3D image and perform all sorts of transformations so that it would produce a 2D image. Inversely for inverse camera projection it consists of taking that 2D image and perform transformations, (in this case triangulation) to reconstruct a 3D image form the 2D image.

Part 2: Procedural Approach:

The team’s approach was guided based on the project 2 supplement and rubric where he had to implement 3 functions to perform selected tasks. Before implementing any of the functions we first had to read all the data that was given and we did that using load() and inside the filename. Since we had our script and the data in the same path we were able to just type the filename and no need for file path. Once we had our vue2, vue4 and our mocapJoints data set we ran the code snips from the project description to understand what was in there.

For our first function we where asked to take as parameters our camera calibration parameters which it is stored as a struct and as well the 3D points of the joints of which the camera is trying to capture as a second parameter. To gather the out

For the second function we where asked to take as parameters our

Part 3: Experimental Observations:

Some of the experimental observations

Part 4: Quantitative Results:

The performance of the project was mainly evaluated by comparing and calculating the sum of squares difference between the original 3D points given before any forward and inverse camera projections against the 3D reconstruction after triangulation for our inverse camera projection. Some of the results are:

Part 5: Qualitative Results:

The performance of the project was mainly evaluated by comparing and calculating the sum of

Part 6: Algorithm Efficiency:

The algorithm efficiency has been determined by

Part 7: Epipolar Visualization:

Below you can see the result when calculating the epipolar lines and placing them for both images.

Part 8: Team Members Contributions:

Joshua Zapusek:

Josue Perez:

Aziz Boudy: