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CSE 167

PA4 report

1. Same as in the previous programming assignment I only used the formulas from the assignments pdf. I used -360/(480 * **qc.columns.1.x** + 360 * -qc.columns.1.z) to calculate alpha for the start point in the focal projection equations.

   qc.columns.1.x represents the second column of either the attitude matrix for device motion mode or the rotation matrix from the gyro mode. **Qc.columns.1.y** and **qc.columns.1.z** were used for the y and z coordinates.

   I also needed to change the sign of z and y coordinates in order to ensure the line would move in the correct direction.

   ((480 * alpha * -qc.columns.1.y)/(alpha * -qc.columns.1.z + 1)) + 1280/2 was used to calculate the start point of the line.

   (719 - 360)/((480 * qc.columns.1.x - 719 * -qc.columns.1.z + -qc.columns.1.z * 360)) was used to calculate the alpha for the end point.

   ((480 * alpha2 * -qc.columns.1.y)/(alpha2 * -qc.columns.1.z + 1)) + 1280/2 was used to calculate the end point of the line, with alpha 2 being found in the above formula.

   Alpha and beta measurements were passed from the coremotion file to the camera file and their respective matrices were found and I multiplied the two matrices together with the initial rotation matrix which was derived from the gyro data and converted to a matrix via Rodriguez formula. After this was found I simply kept multiplying the matrices together in a cascade to continually update the line being drawn.

2. The behavioral differences were not as pronounced as the differences in the last programming assignment, but much like the accelerometer mode in pa3, the gyro mode is slightly jittery as well.

3. Yes , I do believe I calculated the line correctly as it behaves exactly the same or at least very similarly to the video examples, and in the demonstration from the lecture.

4. I believe I was able to complete the assignment fully.