CS411 - Computer Graphics Lab 1

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April, 2020

1 OpenGL 4.5

The core profile of OpenGL 4.5 has made deprecated immediate mode and many other functions. Thus, this lab has been more challenging than expected.

2 Lines with the DDA

Lines created by the DDA is highly imprecise compare to glDrawArrays(GL_LINES) and can be observed with small lines in the waiting window.

However, the execution time is faster than Bresenham's Algorithm. I hypothesize that this is due to optimized floating point calculation of the machine.

3 Lines with Bresenham's Algorithm

Lines created by Bresenham's is highly imprecise compare to glDrawArrays(GL_LINES) and can be observed with small lines in the waiting window. It also requires more time to execute compare to the DDA.

4 Ellipses with Midpoint Algorithm

The implementation is adapted from Agathos et al.

5 Parabolas with Midpoint Algorithm

The implementation is adapted from Agathos et al.

6 Hyperbolas with Midpoint Algorithm

The implementation is adapted from Agathos et al.

Figure 1: Result

7 Bibliography

Agathos, Alexander, Theoharis Theoharis, and Alexander Boehm. "Efficient integer algorithms for the generation of conic sections." Computers Graphics 22.5 (1998): 621-628.