



Due Date: 23:59 pm on Thursday, October 24th, 2024

WebGL2 canvas and simple drawing

In this assignment, you will get familiar with WebGL2 canvas and learn simple drawing. First of all, you will create a canvas using **WebGL2**. Then, you will implement gl's drawing function to draw the requirements below.

- Draw an umbrella on a white background; where the handle and the fabric have different colors. The end result is supposed to look like the figure below (See Figure 1).
- Do not read the vertices from any file.
- Construct the border points by calculating curvy vertices utilising Bézier curve algorithm [1].
- Construct the triangles from border points utilising polygon triangulation algorithm [2].

Hint: First draw the handle, then draw the fabric.

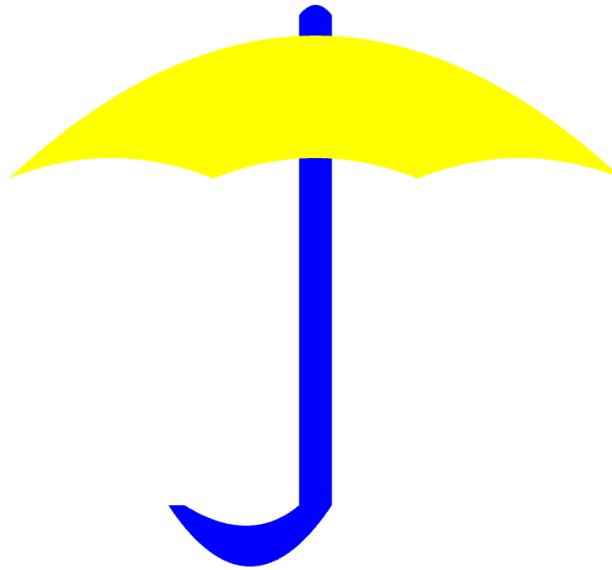


Figure 1: Umbrella.

The Implementation Details

1. Implement your homework using **WebGL2**. All programming assignments must use the shader-based functionality of **WebGL2**: at least one vertex shader and one fragment shader.
2. **Implement your Bézier curve and polygon triangulation algorithms.**
3. The assignment must be original work. Turning in someone else's work, in whole or in part, as your own will be considered as a violation of academic integrity. Please note that the former condition also holds for the material found on the web as everything on the web has been written by someone else. **Detection of such plagiarism**

in a submission will automatically void the submission and establish grounds to trigger an official disciplinary investigation. General discussion of the assignment among peers is allowed, but do not share answers, algorithms or source codes. **Also using other resources (example source code, book, webpage etc.) as a code and javascript libraries (except jquery, Angel's book) are not allowed.**

4. Do not write the scripts into the html file. Reference your scripts in html.
5. You should use Netbeans or Webstorm as IDE for your projects.

The Report

You will write a report on latex for this assignment. You will explain the code parts and algorithm for drawing snowflake.

What to Hand In

You should submit entire Netbeans or Webstorm project directory including javascript files and html file in a zip file extracted from IDE. Submission file structure is as given in below:

- b<studentNumber>.zip
 - |–Experiment1_2024 (The whole Netbeans or Webstorm project)
 - |–report.pdf

Archive this folder as **b<studentNumber>.zip** and send to the submit system.

Grading

The assignment will be graded out of 100:

- CODE: 0 (no implementation), 40 (a partial solution– some parts of umbrella), 60 (a partially correct solution - the handle or fabric), 80 (a correct solution - the shape given in Figure 1).
- REPORT: 20 (A proper report written in L^AT_EXtemplate).

Academic Integrity

All work on assignments must be done individually unless stated otherwise. You are encouraged to discuss with your classmates about the given assignments, but these discussions should be carried out in an abstract way. That is, discussions related to a particular solution to a specific problem (either in actual code or in the pseudocode) will not be tolerated. In short, turning in someone else's work, in whole or in part, as your own will be considered as a violation of academic integrity. Please note that the former condition also holds for the material found on the web as everything on the web has been written by someone else.

References

[1] https://en.wikipedia.org/wiki/B%C3%A9zier_curve

[2] https://en.wikipedia.org/wiki/Polygon_triangulation