Gerbs Curve Visualizer

Project presentation by Daniel Aaron Salwerowicz

Project Description

01

Implement

- 3rd degree B-Spline curve.

02

Implement

- Blending of curves using B-Function.

03

Implement

- Model curve.

04

Implement

- GERBS Curve.

05

Use

- Affine transformations to animate the curve.

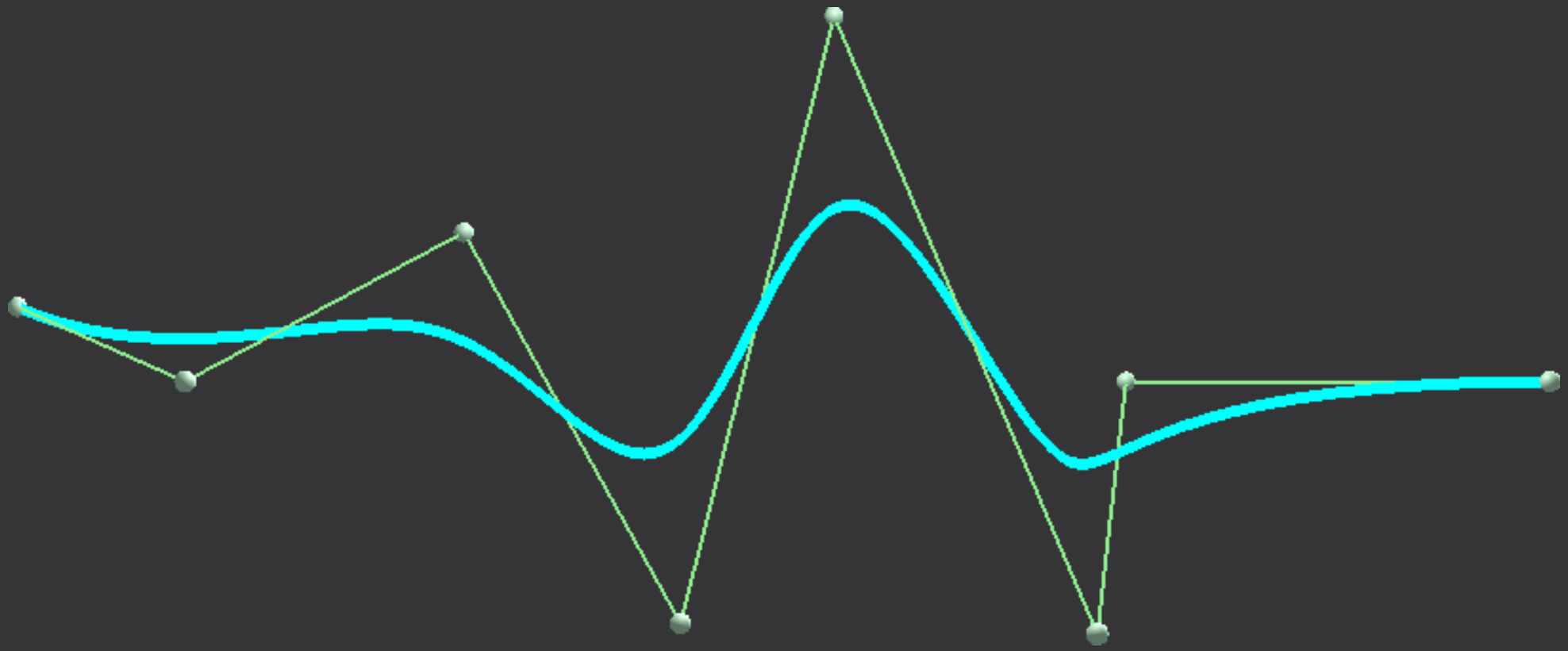
06

Implement

- GERBS Surface.

B-Spline

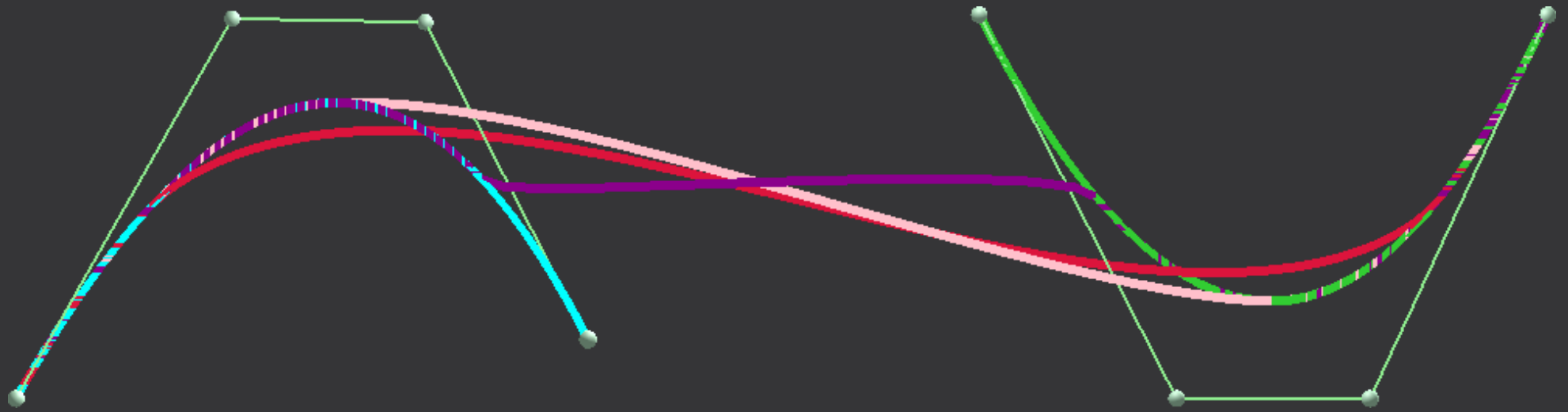
- A curve made up of curves "welded together" at a point.
- Clamped B-Spline.
- Made using control points and least square.
- Unlike Bezier can be defined over arbitrary interval.



Result

Blending

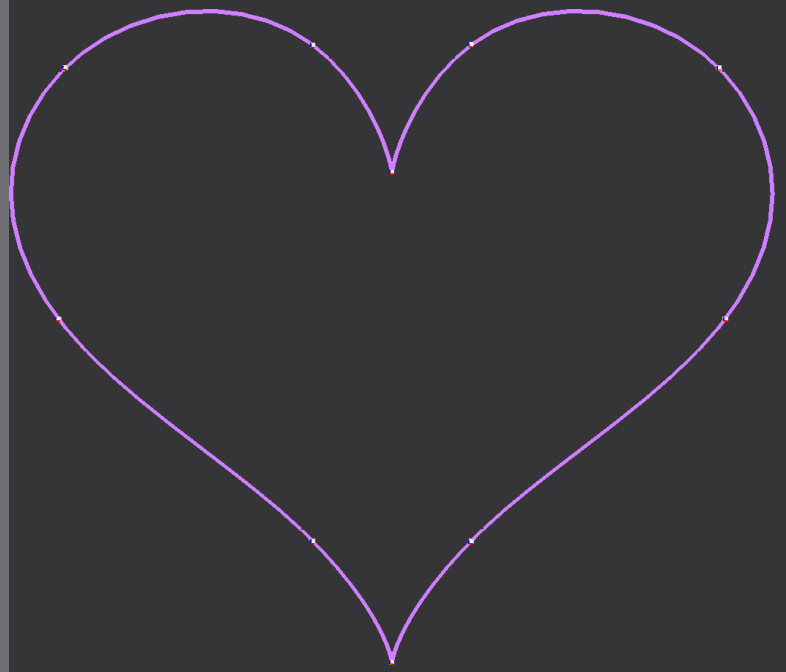
- Blend two separate curves into one.
- Pick arbitrary point in curve for blending.
- Apply B-function for blending, polynomial function of 1st order.
- C1 smooth curve.



Result

GERBS Curve

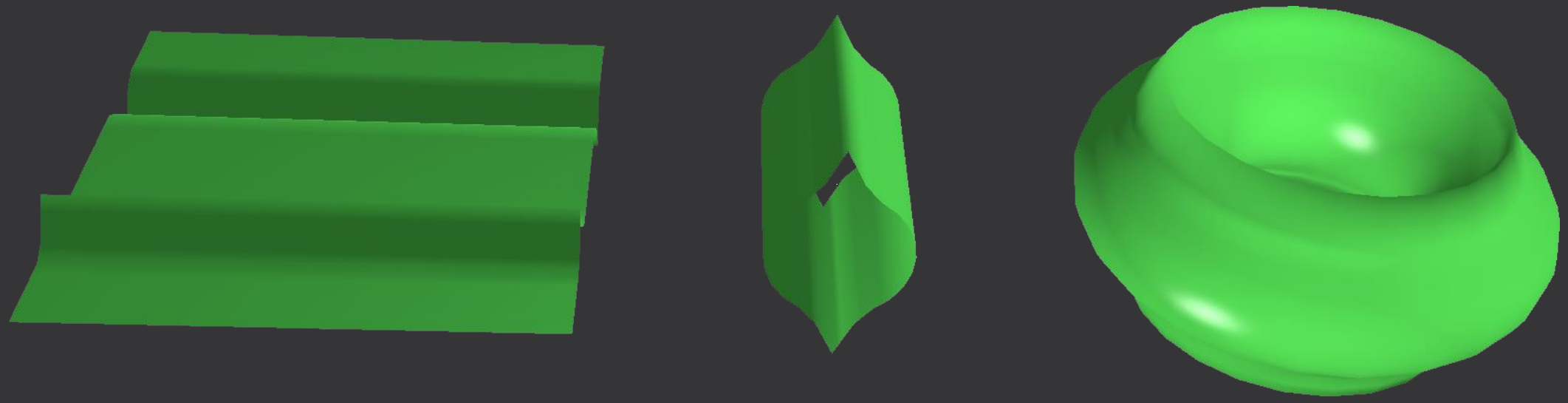
- Uses local curves and blending instead of control points.
- Much more control, at bigger calculation cost.
- Knot vector must be adjusted depending on curve.
- Modeled after heart, animated using affine transformations.



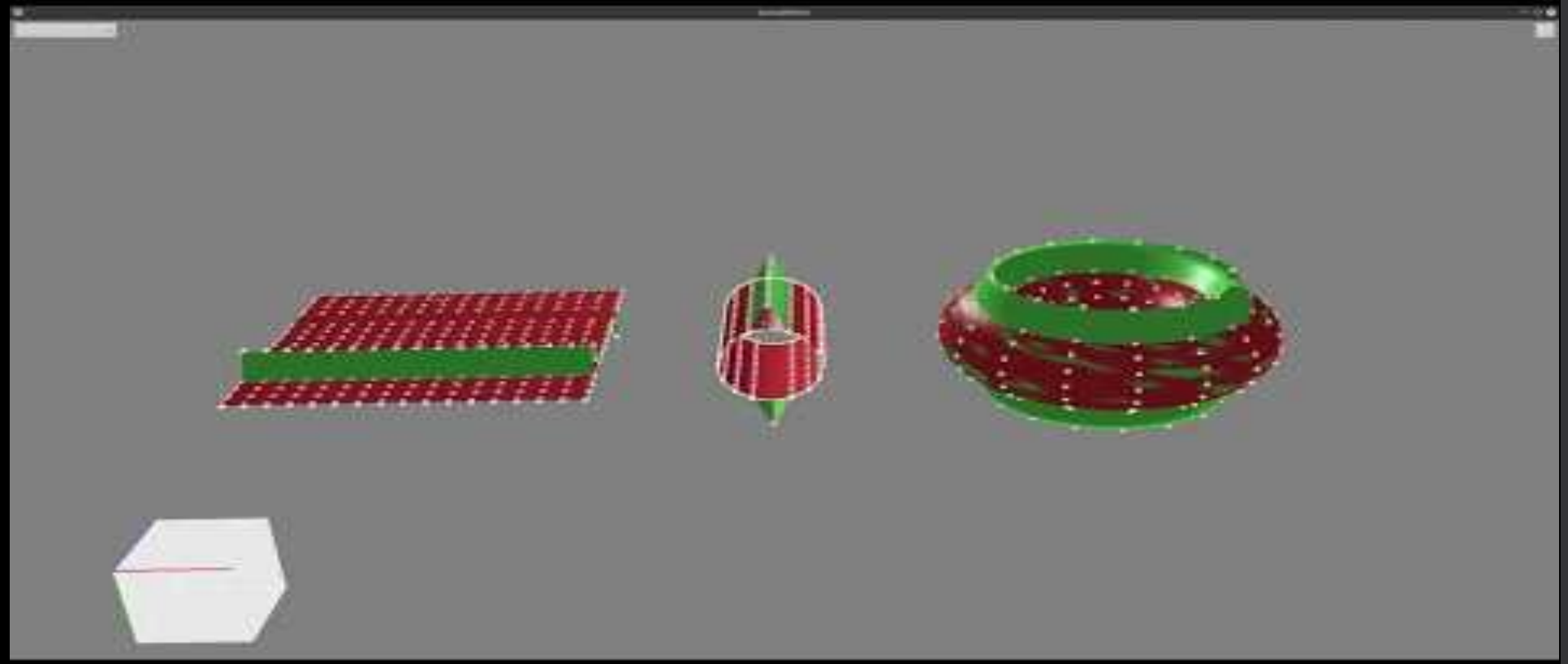
Result

GERBS Surface

- Similar to GERBS curves, uses local surfaces instead of curves.
- Needs two knot vectors and matrix of local surfaces.
- Matrix of surfaces needs to be made iteratively.
- Good result but not perfect.



Result



Thank you for your attention!

Questions?