Modelling and Visualizing Shattering

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September 17, 2019

1 Team Members

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2 Description

This end result of this project will be a web application where one can shatter variably shaped objects in different ways. The geometric aspects of this will be modelling various types of objects and then of course modelling and rendering the shattering of said objects.
It will be necessary to research various methods of modelling objects as well as various methods for simulating the destruction of objects with fidelity to analogous physical phenomena. In addition to this research, I will also need to learn how to best animate the destruction of objects.

3 Timeline

- 9/28/19 - Identify graphics and web frameworks and tools that will be suitable
- 10/5/19 - Have a working prototype for creating and displaying 2D objects
- 10/12/19 - Identify some possible suitable methods for modelling shattering of objects
- 10/19/19 - Decide on method for modelling shattering
- 10/26/19 - Have basic implementation of shattering algorithm
- 11/2/19 - Identify method for animating shattering of a 2D object
- 11/9/19 - Have working prototype for animating shattering of 2D object
- 11/16/19 - Consider 3D objects
- 11/23/19 - Make application robust and nice to use

- 11/30/19 - Have display, shattering, and animation of shattering for 3D objects

References

[1] K. Fleischer D. Terzopoulos. Modeling inelastic deformation: Viscoelasticity, plasticity, fracture. *SIGGRAPH 88 Conference Proceedings*, 22:287–296, 1988.

[2] James F. O'Brien and Jessica K. Hodgins. Graphical modeling and animation of brittle fracture. In *Proceedings of ACM SIGGRAPH 1999*, pages 137–146. ACM Press/Addison-Wesley Publishing Co., August 1999.

[3] Jeffrey Smith, Andrew P. Witkin, and David Baraff. Fast and controllable simulation of the shattering of brittle objects. *Comput. Graph. Forum*, 20(2):81–90, 2001.