HS18 Final Presentation
Clothesline

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Objective

Create a cloth simulation that interacts as you would physically expect

- Hangs from corners, toggle set-up
- Intuitive collision with rigid body
- Intuitive cloth movement
- Proper reaction to external forces like gravity and wind

Features added & methods used

- Mass-spring system to simulate the cloth
  - Four varieties of springs
- Verlet integrator
  - 4th order accurate, does not explode like explicit Euler
- Multiple cloths
  - More than one cloth can be added into the simulation
- Rigid body collision
  - Radial distance
- Wind
  - Outside force, randomizing location, magnitude, and direction
- Toggles
  - Toggle pinned corners, ball, wind, stiffness

Difficulties

- Cloth-cloth collisions
    - Updating to avoid/correct collisions
    - Was initially a minimal requirement, moved to bonus requirement
- Debugging
    - Crashing
    - Odd movement
    - Finding optimal parameters
- Slow iteration
    - Made improvements in speed of calculation

Demo

Resources

- Matt Fischer. "Cloth", Stanford 2014. https://graphics.stanford.edu/~mdfisher/cloth.html
- Mosegaard's Cloth Simulation Coding Tutorial https://viscomp.alexandra.dk/?p=147
- "Fast Simulation of Mass-Spring Systems" SIGGRAPH Asia 2013: Tiantian Liu, Adam W. Bargteil, James F. O'Brien, Ladislav Kavan

Q&A