RAGE QUIT

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Introduction

Our project was born out of a particularly stressful office hour session a few hours before Assignment 3 was due. In RAGE QUIT, the user can touch, smash and throw objects that shatter when struck with enough force, providing a satisfying form of stress relief. The project integrates several ideas of haptics and graphics, the key ones being event-based haptics, grasping and manipulating objects, a robust dynamics engine, and fracturing of meshes.

Event-based Haptics

Given that our project is largely about smashing objects, it was important to get the feeling of smashing an object and having it shatter correct. Thus, we introduced event-based haptics, forces that are time-dependent instead of position dependent. We modeled our event forces as a decaying sinusoid summed with a fixed-width pulse like so:

$$f_{event} = A(f_0)e^{-kt}\cos(b\pi t) + \Pi(ct)$$

Note that the coefficient A is dependent on the force initially striking the object (f_0). Then our total output force would simply be the sum of the two.

$$f_{total} = f_0 + f_{event}$$

We have three different types of events that trigger different forces – a tap event (upon a gentle touch of an object), a shatter event (upon smashing an object), and a
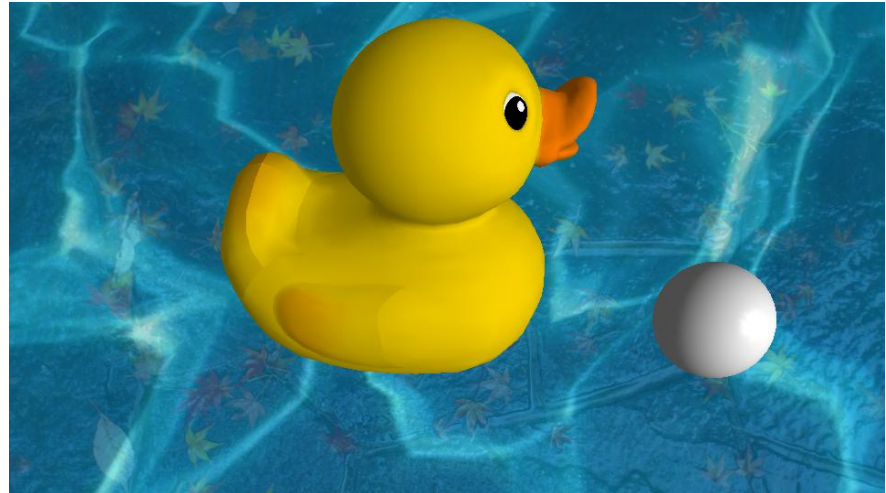
bounce-back event (upon smashing an unbreakable object). Each event generates a force in the same model as above, simply different coefficients. The coefficients were chosen arbitrarily and hand-tuned.

Dynamics

Fracturing

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Results

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