

MICHAEL BUCKLEY

www.michaelbuckley.us • www.vimeo.com/laughingb0y • (978) 530-6430 • mbbuckley@umass.edu

EDUCATION

University of Massachusetts Amherst

Bachelor of Science Major: Physics Minor: Computer Science

GPA 3.62; Dean's List President of Society for Physics Students

Amherst, Ma

Expected Spring 2018

EXPERIENCE

Computational Physics

Summer 2016-Present

Grason Research Group -- PI: Professor Grason, Polymer Science and Engineering

- Developed computational tools to simulate the evolution of structures in response to free energy minimization.
- Studied foam models and packing problems to apply the mathematics of such to real-world object formations.
- Modelled the potential energies of physical systems and tracked energy minima over their parameter spaces to efficiently capture key dynamics. *Paper from the research I conducted is in the process of being published.*

Computer Animation

Independent Work

Videos can be seen at vimeo.com/laughingb0y

- Wrote code in Houdini to approximate double pendulum motion by solving for the Lagrangian and applying a forward Euler method of integration. By this I was able to obtain fairly realistic swinging of a character's arms given the velocity of the rest of their body without having to perform a lengthy and less controllable finite element simulation. *This technique can be seen in the Goldilocks video.*
 - Wrote code in Houdini to rig meshes to internal lines. I was then able to animate the internal lines using a time dependent vector field. This allows for use of a vector field to create scalable organic looking mesh deformation with inexpensive and fast look development. *This technique can be seen in the Wiggly * videos.*
 - Wrote a number of basic computer graphics tools in Java using the OpenGL API including a multi-threaded ray tracer with anti-aliasing and a linear, bezier, and spline curve maker.
 - Well versed in both Houdini, Maya, and Zbrush software tools. Have worked 60+ hours with FEM in Houdini and put 50+ working hours into fluid and pyro simulations. Have rigged and animated characters in both (40+ hours) Maya and (40+ hours) Houdini, as well as modelled extensively in both programs. I have also modelled 100+ hours with Zbrush.
-

COURSEWORK

Mathematics

- Ordinary Differential Equations, Linear Algebra, Calculus I, II & III, Vector Calculus, Mathematical Methods in Physics

Physics

- Mechanics, Quantum Mechanics, Statistical Mechanics, Electromagnetism, Solid State Physics, Electronics

Computer Science

- Data Structures, Computer Graphics, Computer Systems Principles, Reasoning under Uncertainty
-

PROFICIENCIES

Programming Languages

- Python, C, Java, C++, Wolfram, Lisp (order: decreasing # of lines written)

Programs

- Houdini, Maya, ZBrush, Photoshop, Natron, Nuke, Mathematica, Surface Evolver, Excel, Emacs

Traditional Art Mediums

- Acrylics, Oils, Pen and Ink, Pencil
-

REFERENCES

Greg Grason

Research Supervisor

Polymer Science and Engineering; Umass Amherst

P: 413-577-1611 E: Grason@mail.pse.umass.edu

Chris Perry

Animation Mentor

Cognitive Science Department; Hampshire College

P: 414-559-5476 E: Perry@hampshire.edu