Nathan Xu Marshak <nmarshak@seas.upenn.edu>

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EDUCATION

University of Pennsylvania, School of Engineering & Applied Science, Philadelphia, PA *2009-Present*

- Candidate for B.S.E. in Computer Science, May 2013
- Candidate for M.S.E. in Computer Graphics and Game Technology, May 2014
- Cumulative GPA: 3.79
- Selected Courses Completed (Computer Science): Intro to Computer Graphics. Algorithms. Computer Architecture. Computer Operating Systems. Computability, Complexity & Automata.
- Selected Courses Completed (Other): Calculus I, II, III. Intro to analog circuits with lab. Intro to digital circuits with lab.
- Relevant Courses In Progress: Computer Graphics (rendering). Computer Animation. Linear Algebra. Senior Design Project (implementing "Animation of Dynamic Legged Locomotion" by Raibert and Hodgins. Plan to combine with other dynamics-based techniques to make a sumo wrestling simulation).

EMPLOYMENT

SIG Center for Computer Graphics, University of Pennsylvania, Philadelphia, PA *May-August 2012*
Research Assistant

- Co-designed and implemented system for blending character animation controllers in the Unity game engine (C#). Integrated example-based reaching and gaze tracking functionality from the ICT SMARTBody library into Unity.
- Winner of the 2012 Diane Chi Summer Research Award.

University of Pennsylvania, Philadelphia, PA *Fall 2010-Summer 2011*
Teaching Assistant / Mentor

- Assisted students with homework and labs for intro programming course (Java). Led discussion groups to review course material. Graded tests and homework.

University of Pennsylvania, Philadelphia, PA *July 2010*
Residential Teaching Assistant

- Supervised high school students in Summer Academy in Applied Science and Technology program. Assisted computer science students with coursework (Python).

TECHNICAL EXPERIENCE

Independent Projects:

- **Raytracer** (Summer 2012). Diffuse lighting and reflections. Realtime preview (diffuse, rasterized) with Arcball camera. Model loading with ASSIMP. C++.
- **Augmented Reality Demo** (Spring 2012). OpenGL layered on top of video feed. Turrets shoot character that follows path set by fiducial markers. Independent study supervised by Dr. Camillo J. Taylor. ARToolkit library, GLUT, C, C++.
- **Depth Map Compression for Research** (Summer 2011). From-scratch implementation of Huffman, runlength, and difference coding. Assisted Dr. Camillo J. Taylor in exploring compression of depth data. C.

Selected Class Projects:

- **3D Model Editor** (Spring 2012). OBJ reading and writing. Models are loaded into a half-edge structure. Free-form deformation (FFD) of models. C++.
- **Filesystem** (Fall 2011). Implemented FAT-style filesystem with partner. FS was written for operating system project with a total of four people. C.
- **Shell** (Fall 2011). UNIX shell with redirection, piping, and job control. With partner. C.
- **Assembly-level Simulator** (Fall 2010). Simulator of RISC processor. Runs LC4 assembly programs. C.

Languages and Technologies:

- C, C++, C#, Unity game engine, Java.
- Limited experience with Python, Assembly.