WAYNE WU

t73wu@edu.uwaterloo.ca | www.wuwayne.com | www.linkedin.com/in/wayne-wu

HIGHLIGHTS

Languages: Python, C++, C#, Java, JavaScript, MATLAB
Concepts: Data Structures, Algorithms, OOP, Concurrency
Courses: Computer Graphics, Computational Physics, UI/UX
Graphics: OpenGL/WebGL, GLSL, VEX
3D Animation: Houdini, Blender, Maya
Game Engines: Unity, Frostbite

PROFESSIONAL EXPERIENCES

3D Software Developer — Side Effects Software — Toronto, ON — Summer 2018

- Created material-based fracturing presets for rigid body destruction specifically for concrete, glass and wood using modularized recursive fracturing with Voronoi and Boolean (CSG).
- Designed a series of RBD nodes in Houdini for destruction reducing drastically the complexity of Bullet constraints setup as well as allowing improving the art directability using paint-driven fracture pattern.

- Developed a FACS-based facial auto rigging system for Houdini H17, adaptable to bones, blend shapes and mocap driven animations, while easily transferable to other characters.
- Designed the rigging workflow with new user-friendly interface and implemented 3D geometry and rigging utilities in Python, VEX and C++ to support the auto-rigging processes.

Technical Director — Tangent Animation — Toronto, ON — Summer 2017

- Extended functionalities in Blender using Python such as custom outliner, dynamic constraint tools, and various character utilities, all which have greatly sped up the rigging and animation workflow.
- Developed a Blender-integrated character picker using PyOpenGL, tailored for large production with many varieties of character, and designed for best user experience for animators.

Associate Software Developer — Electronic Arts — Vancouver, BC — Winter 2017

- Supported PvZ: Garden Warfare 2's live service team with new in-game features and workflow improvements within Frostbite (engine) and Blaze (server), both which were heavily C++ focused.
- Developed a collection of automation toolsets in C# that allowed direct access and modification of the live service game components for QA and testing purposes.

Software Engineering Intern — Yahoo Inc. — Taipei, Taiwan — Summer 2016

- Led the development of a mobile solution using Android (Java) that improved Yahoo e-commerce app's search result using smart keyword filtering with innovated user interface.
- Open sourced Yahoo's internal toolset, Parsec, used to accelerate the process of building Java web services by handling the grunt work using Gradle and RDL. (https://github.com/yahoo/parsec)

PERSONAL PROJECTS

Cloth Simulation — MATLAB — www.wuwayne.com/clothsim — Winter 2018

- Implemented a cloth simulation solver in MATLAB based on Baraff-Witkin's paper.
- Explored different numerical methods used to solve the differential equations including both explicit and implicit numerical schemes, as well as techniques to approximate the Jacobians.

Shallow Water — WebGL — www.wuwayne.com/shallowwater — Fall 2017

- Simulated the shallow water equations model using GPGPU in WebGL.
- Implemented ray marching algorithms for rendering with refraction and caustics from water.
- Added all support for camera movement and web interactions in JavaScript.

Black Strider — Unity Game — www.wuwayne.com/blackstrider — Fall 2016

- Created an action runner game in Unity using open-sourced sprites and built-in Unity assets, from level design, animation, gameplay programming to HUDs.
- Implemented scripts in C# to support the game logic such as the state machine behaviours and controls.

EDUCATION

University of Waterloo, Waterloo, Ontario
Bachelor of Applied Science, Honours Systems Design Engineering, 2019

- W.W King Exchange Fellowship
- Engineering Faculty/Staff Upper Year Scholarship
- Dean's Honour List 2015-2017
- President's Scholarship 2014-2015
- **GPA: 3.9**

INTERESTS

- Computer Graphics
- 3D Animation & VFX
- Physical Simulation
- Film & Game Making
- Product Design
- Bartending