

WAYNE WU

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HIGHLIGHTS

- **Focus:** 3D visualization, simulation, procedural graphics, rendering, real-time, immersive, visual effects, interaction design
- **Interests:** traveling, bartending, cinematography

SKILLS

- **Tools:** Houdini, Unity, Unreal Engine, CUDA, Vulkan, WebGL, PyTorch, Qt, TouchDesigner
- **Languages:** C++, Python, GLSL, VEX, C#, Java, JavaScript, SQL, HTML, MATLAB

PROFESSIONAL EXPERIENCE

R&D Engineer (Production), Industrial Light & Magic

Jun 2021 – Sep 2021

- Presented Blue Sky Studios' procedural USD workflows at SIGGRAPH 2021, and simultaneously applied the concepts to ILM's pipeline, validating and refining the solution to be flexible and pipeline agnostic.
- Established the long-term USD vision across disciplines for the studio, converging both asset and shot-based workflows for ease of maintenance while facilitating greater collaborations between departments.

Technical Director (Production Technology), Blue Sky Studios

Aug 2019 – Jan 2021

- Architected our pipeline system framework in Houdini (Python), with PDG integration and simplified pipeline bridges, enabling technical artists to develop parallelized setups on over 30,000 show products within Houdini.
- Established new FX workflows in USD and Solaris (VEX, Python) to work with RBD, VDB, and mesh-based effects, including SOP-LOP translation, scene organization, heavy layer caching, shading, and rendering with RenderMan.
- Unified and refactored all rendering tools used by both Maya and Houdini-based departments with PyQt for user interface and PDG for farm job submissions and management.
- Trained 50+ artists and TDs on pipeline, USD, Solaris, and PDG concepts, and interfaced with artists, supervisors, and external vendors in formulating workflow design options.

3D Software Developer (Co-op), SideFX

Fall 2017 & Summer 2018

- Introduced the material-based fracturing toolkit for Houdini (VEX), using new fracturing techniques, and a modularized RBD workflow to efficiently manage and art-direct destruction setups with 4x speed gain.
- Developed a facial auto-rigging system for Houdini (Python, PyQt, VEX, C++), with interactive 24+ fps animation playback, and retargetable FACS blend shapes independent of characters' facial topologies.

ACADEMIC & PERSONAL PROJECTS

Metadrobe (Digital Fashion), Spring 2023

- Developed a high-tech venture concept around digital fashion and virtual try-on based on primary market research with over 70 subject-matter experts including fashion enthusiasts, retailers and designers.
- Prototyped a proof-of-concept using cutting-edge 3D software from full-body scanning (In3D), digital pattern creation (Clo3D), multi-layer draping and simulation (Houdini), to rendering using UE5 and Nvidia Omniverse.

Wiggly (Authoring Tool), Spring 2022

- Implemented a multi-threaded optimization-based algorithm for animating deformable objects in Houdini (C++, HDK), and designed a modular and procedural workflow (Python, VEX) for artists to create constraints and splines to generate the animation.

Real-time Crowd Simulation, Fall 2021

- Developed the first interactive crowd simulation application in WebGPU contributing to its early community.
- Implemented the core position-based algorithm using compute shaders (WGSL, JavaScript) while optimizing the compute and render pipelines to reach 10,000+ agents at interactive rates on most devices.

EDUCATION

University of Pennsylvania, PA, USA

Master of Science in Engineering, **Computer Graphics and Game Technology**, 2023

- Teaching Assistant for GPU Programming and Architecture, Fall 2022

University of Waterloo, ON, Canada

Bachelor of Applied Science (Honors), **Systems Design Engineering**, 2019

- Graduated with Distinction - Dean's Honors List, 2019
- Engineering Faculty/Staff Upper Year Scholarship, 2018

VOLUNTEERING

- SIGGRAPH 2018, 2019

LANGUAGES

- English (Native)
- Mandarin (Native)
- French (Conversational)
- Japanese (Beginner)