SUNNY LAN

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github.com/sunny-lan

sunny-lan.github.io 🌐

C++, C#, Python, Unity Engine, Houdini, Javascript & Typescript
University of Waterloo - Software Engineering 4A

WORK EXPERIENCE

SideFX - R & D Dynamics Team
Jan 2023 - April 2023

C++, Python, OpenCL, Houdini, Vex, UI, XPBD, Procedural Geometry

- **Add transform handles and pinned points selection to Vellum Brush**, helping artists to intuitively manipulate cloth and softbodies within a physical simulation
- **Add shrink and expand tools for triangle and tetrahedral constraints to Vellum Brush**
- **Add wind shadowing to Vellum simulations**, allowing users to create simulations where objects or characters block the wind from reaching cloth or particles
- **Add Measure Thickness node**, providing robust measurement of thickness across arbitrary geometry based on maximal fitting spheres. Optimized cook time from 20 to 2s
- **Polish / bugfix animation dopesheet in preparation for next major Houdini release**
- **Upgrade Volume and Attribute Blur**; add sharpen mode, OpenCL blur, and mask aware blur
- Employer Rating: Outstanding

Unity Technologies - VR/Desktop/Mobile Development
May 2022 - August 2022

Unity Engine, C#, VR, UI, Multiplayer, Multiplatform support

- **Fix over 25 bugs** including several release blockers
- **Add support for Passthrough** (AR within VR headset) in collaboration with Meta
- **Add grab/zoom navigation** in VR, with multiplayer synchronization
- **Develop prototype for collaborative tabletop model viewing** & room scale calibration in VR
- Employer rating: Excellent

Behavior Interactive - VR Game Development
August 2021 - September 2021

C++, GLSL, Rendering, Input Systems, UI, OpenVR

- Participate in porting game for VR
- **Refactor render engine to render from multiple camera angles** in the same frame
- **Add support for UI render to texture**
- **Improve VR UI experience;** allow resetting headset position and disabling camera shake
- Employer rating: Outstanding

AMD - Windows Kernel Graphics Driver Development
May 2020 - August 2020

C++/C, Rust, GPU Drivers, GPU Scheduling, OS development, Emulation

- **Contribute to hardware scheduler firmware team; write tests, reproduce and fix bugs, and provide support for new firmware debugging tools**
- Help implement and test page migration on multi GPU systems
- Employer rating: Excellent

Cont.
January 2021 - May 2021

- **Write micro-OS to emulate GPU firmware,** allowing profiling and reliable reproduction of bugs
- Employer rating: Outstanding

AWARDS

CCO Silver (May 2019) **and CCO Bronze** (May 2018)
- **National programming competition** - ranked Top 15 in Canada, out of 2700 contestants - strong data structures/algorithms knowledge required

PicoCTF 2nd place in Canada (November 2018)
- **Cybersecurity Capture The Flag competition** involving web exploitation, binary exploitation, etc.

RELAVANT COURSES

CS 349 - User interfaces - development in Java and Kotlin for Android
- Learn software patterns for UI, such as MVC, as well as UI design principles
- Practical assignments and projects involving writing applications in Android Studio

PROJECT HIGHLIGHTS

Grage
August 2019 - May 2023
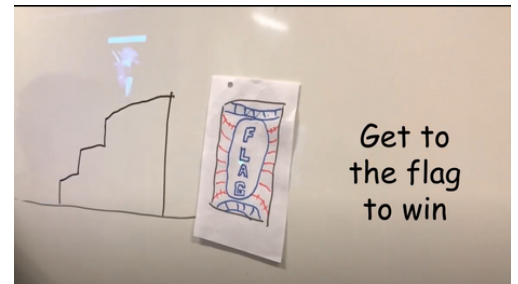Typescript, Javascript, Node.js, Websockets, ESP8266
- General purpose web application allowing secure control of IoT devices across the web
- Provides simple API for extending services and new device types
- Sample use case is currently controlling and monitoring a home garage door
- https://github.com/sunny-lan/grage

September - December 2019

E-Wall - Augmented reality game
Python, OpenCV, Numpy, Pygame
- A set of games where characters can interact with reality; they can stand on your hand, whiteboard markers can be used to draw platforms and shields from projectiles
- https://github.com/RichardYSun/E-Wall
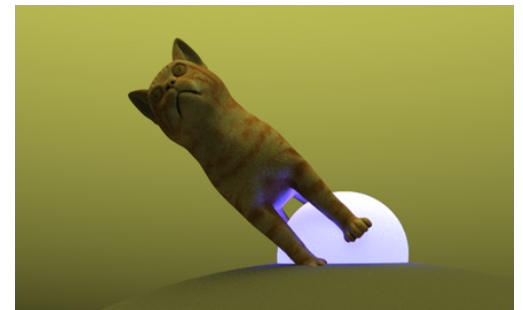- https://youtu.be/HhP_JoE1lSM

January 2023

Raytracer
C#
- Ray tracer based on Ray Tracing in One Weekend
- Supports triangle meshes, textures and bump maps, constant density volumetrics, BVH, and camera depth of field
- https://github.com/sunny-lan/raytracer

May - August 2022

Serious Monkey Business
Unity (C#), VR (Oculus Quest)
- A Vapourwave themed tower defense/FPS game in VR
- https://youtu.be/_yFQBTXLHXw