**THY TRAN** thytran316@outlook.com ● tatran5.github.io ● 408.915.9698

**EDUCATION**------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

**University of Pennsylvania**, School of Engineering Philadelphia, PA

BSE in Computer Science: Digital Media Design May 2021

**SKILLS**----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------**Languages** C++ ● C# ● Java ● CUDA ● GLSL ● HLSL ● WebGL ● Cg ● MaxScript ● C ● JavaScript ● Kotlin ● OCaml

**IDEs** Qt ● Visual Studio ● Unity ● Unreal Engine ● Android Studio

**Art programs** Maya ● ZBrush ● Substance Painter ● 3ds Max ● Houdini ● Adobe Creative Suite

**ENGINEERING COURSES**-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Fall 2020 courses are labelled with \*

GPU Programming \* Introduction to Computer Graphics Game Design and Development

Computer Vision \* Physically Based Animation Software Design and Engineering

Advanced Rendering Computer Animation Data Structures & Algorithms

**EXPERIENCE**-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

**Electronic Arts: BioWare**, Technical Artist Intern C#, 3ds Max, MaxScript, Houdini May - Aug 2020

Implemented a procedure to enhance meshes with vertex colors and replace them in a game

Improved tools used to generate vertex color for tree meshes

Communicated with artists to assess needs and provide support

**University of Pennsylvania**, Research Assistant ITK Snap, Houdini, team of 3 Jun - Aug 2019

Built a pipeline to model organs of patients with hiatal hernia from CT scans

Segmented organs on CT scans and created a 3D simulation of the organs

**University of Pennsylvania**, Teaching Assistant

Data Structures and Software Design Java, IntelliJ, Eclipse Jan - May 2020

Advanced Rendering C++, Qt, WebGL Jan - May 2020

Visualizing the Past Maya Aug - Dec 2019

Art, Design and Digital Culture (Head TA) Java, Processing Aug 2018 - Dec 2020

**PROJECTS**----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

**Deferred and Forward+ Rendering** WebGL, JavaScript Fall 2020

Implemented these rendering methods using clusters for efficiency

Optimized deferred rendering with efficient G-buffers

Made effects for deferred rendering including toon shading and Blinn-Phong

**Monte Carlo Path Tracer** CUDA, C++

● **GPU version** Fall 2020

Designed diffuse & reflective materials, depth-of-field, motion blur and stochastic sampled antialiasing

Optimized with first-bounce caching, path termination (stream compaction) and material memory contiguity

Developed support for .obj mesh loading with bounding volume intersection culling

Coded a denoiser based on edge-avoiding A-Trous wavelet transform for fast global illumination filtering

● **CPU version** Spring 2019

Made different materials using BSDFs

Wrote multiple importance sampling, global illumination, and photon mapping

Constructed thin lens camera, point light, spotlight, implicit surfaces, and constructive solid geometry

**Flocking Simulation** CUDA, C++Fall 2020

Simulated flocking behaviors of birds or fish based on Reynolds Boids algorithm

Utilized uniform grid with semi-coherent memory access for optimizations

**Haystack Hoarder** Unity, C#, team of 3 Spring 2020

Developed a 3D online multiplayer competitive game using Photon Unity Networking

Programmed player movement and interaction, behavior of resources, UI elements and sound effects

Modeled, textured, rigged, and animated assets in the game

**Big Fish, Little Fish** Unreal Engine, team of 3 Spring 2020

Designed player mechanics, AI for predator and prey, UI, and sound effects for a 3D puzzle game

Created underwater environment with post processing effects and particle system

Modeled, textured, rigged, and animated assets in the game