RASHI SINHA

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EXPERIENCE

Part-Time Lecturer, *University of Southern California - Viterbi School of Engineering* Aug 2024-*Present*

Courses: Technical Character Animation for Games, Character Rigging for Games, Introduction to 3D Modeling, Animation & VFX

- Instructed game art students on building animator-friendly **3D character rigs** in **Maya**, and setting up character **animation systems** in **Unity**.
- Produced **short animations** in Maya by guiding students through the complete **3D content pipeline**, including modeling, texturing, rigging, animation, lighting, rendering, and visual effects.
- Created and presented interactive demos, including a rigged character and animated cat mascot, at a department fest to engage students and promote tech art courses.

Lead Software Engineer, *Easley-Dunn Productions Inc.* Jul 2023-Jul 2024

- Implemented feature extraction using **Python** as part of a machine learning project in computer vision, contributing to a research initiative focused on extracting crucial metadata from gameplay videos.

CG Tech Art Intern, *Soul Machines* Jun 2022-Aug 2022

- Collaborated on prototyping and assessing the feasibility of integrating USD into the Digital People **production pipeline**.
- Automated textured **USD** asset creation from existing 3D asset database with Python scripting to optimize workflow.
- Developed a **Python** tool in **Maya** for artists to visually validate assets early in the pipeline.

Associate Consultant, *IQVIA* Feb 2018-Jul 2021

- Provided technical support to end users, mentored new hires, and conducted global training sessions.
- Designed, developed & integrated functional customizations within an established codebase aligning with client requirements.
- Collaborated on **SQL** scripts for database upgrades and business logic for data migration in a cross-functional agile team.

SKILLS

- **Programming & APIs** Python, C++, C#, HLSL, GLSL, PyQt, USD, Maya Python API, OpenGL
- **DCC Tools** Maya, Unity, Houdini, Blender
- **Version Control Tools** Git, Perforce, JIRA
- **Leadership & Affiliations** Women in Animation at USC, Student Club Lead (2022-2023) and USC SIGGRAPH Club, Member

PROJECTS

Camouflage Editor Tool Demo

- Built a **Maya** UI tool to remap 3-color camouflage textures and export data for Unity integration using **Python** and **PyQt**.
- Authored **Unity C#** scripts to import Maya exports, generate ScriptableObjects, & automate material updates via Shader Graph.
- Automated a cross-DCC asset workflow with parametric material control.

Pose Mirroring Tool

- Developed a **Maya** tool using **Python** to mirror character poses across the YZ plane by inverting or swapping control transformations with support for varied rig setups, speeding up animation workflows.

Gerstner Waves Deformer

- Created a **Maya** deformer node plugin using **Python** to simulate water surfaces based on Gerstner wave equations, with user-adjustable parameters for wave behavior.

3D Rasterizer

- Engineered a 3D rasterizer in **Python** by implementing a full rendering pipeline including linear expression evaluation, z-buffering, space transformations, Phong shading and lighting, and texture mapping.
- Worked in a team to implement wireframe and stylized rendering techniques like toon shading, line art, halftone.

Procedural Foliage Generation Tool

- Designed a custom foliage generation tool in **Houdini**, by leveraging skills from a dedicated course, to generate vegetation with intuitive art directable controls on the HDA user interface. Integrated additional leaf designs to broaden asset variations.

Mass-Spring Deformation System *(Jello Cube)*

- Programmed a **physically-based simulation** of a deformable 3D cube by implementing a mass-spring system in **C++** & **OpenGL**.
- Implemented collision detection with bounding boxes and arbitrary inclined planes, and interaction with external time-independent force fields.

EDUCATION

University of Southern California, *Master's of Science in Computer Science* May 2023

Manipal University Jaipur, *Bachelor's of Technology (B.Tech) in Computer Science* Jul 2018