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
- **Automated** textured **USD** asset creation from existing 3D asset database with Python scripting to optimize workflow.
- Created a **Python** tool in **Maya** for artists to visually validate assets early in the pipeline.
- Supported the integration of USD within the Digital People **production pipeline**.

Associate Consultant, *IQVIA* Feb 2018-Jul 2021
- Provided **technical support** to end users, mentored new resources, 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, Houdini, Blender, Unity
- **Version Control Tools:** Git, JIRA, Perforce, Miro, Visual Studio
- **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**.
- Wrote **Unity C#** scripts to import Maya exports, generate ScriptableObjects, and automate material updates via Shader Graph.
- Enabled a cross-DCC asset workflow with automated, parametric material control.

3D Rasterizer *(3-D Graphics and Rendering)*
- 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.

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

Inverse Kinematics with Skinning *(Computer Animation and Simulation)*
- Developed a real-time IK system in **C++** and **OpenGL**, using Tikhonov Regularization for character deformation leveraging Eigen and Adol-C libraries to significantly reduce solve time. Implemented both Linear Blend and Dual Quaternion Skinning.

Mass-Spring Deformation System *(Jello Cube - Computer Animation and Simulation)*
- Programmed a **physically-based simulation** of a deformable 3D cube by implementing a mass-spring system in **C++** and **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