JOSE ARREGUIN

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EDUCATION

UNIVERSITY OF CALIFORNIA, SAN DIEGO
Bachelor of Science in Mathematics – Computer Science Expected June 2025

- 3.842 / 4.0 GPA

PROJECTS

ANIMATION PLAYER | C++, OpenGL, GLM, ImGui

- Calculated forward kinematics to render proper binding poses for a character given 6 DOFs for position and rotation.
- Implemented smooth skinning algorithm to bind character skin to skeleton from transformation matrices.
- Parsed keyframes, tangents and extrapolation modes for animation to compute a specific joint's keyframe curve.
- Created GUI using ImGui to give user full control over the DOFs for the skeleton and playing the parsed animation.

QUADCOPTER | C, Arduino IDE, Fusion 360

- Provided wireless communication between remote control and custom-built quadcopter through radio.
- Implemented PID control loop to help stabilize quadcopter pitch, roll and yaw.
- Added functionality for remote control to arm quadcopter, tune parameters of PID and calibrate gimbals.

LIFESAVER | C#, Unity, Meta XR SDK

- Collaborated in a team of 4 to develop an MR app to help users navigate through hazardous AQI zones via wayfinding.
- Created seamless menu navigation using hand tracking, symbolic input and voice recognition with Meta XR.
- Implemented tutorial for users to learn about SCBA gear in VR with a World-In-Miniature travel system.
- Won most intuitive controls and best aesthetics from a panel of faculty.

QUATERNION INTERPOLATION | C++, OpenGL, GLM, ImGui

- Implemented Slerp and Catmull-Rom interpolation modes to interpolate between 5 keyframes given by quaternions
- Created a clean GUI using ImGui to let users control the rotations of each keyframe and select interpolation modes.

TECHNICAL SKILLS

Languages: C++, C#, C, Python, Java, HTML/CSS, JavaScript, Lua
Technologies: Unity, Git, OpenGL, GLM, Arduino IDE

COURSEWORK

Advanced Data Structures, Algorithms, Software Engineering, Computer Graphics, Computer Animation, 3D-User Interaction, Parallel Computing, Robotic Systems Design & Implementation

ADDITIONAL SKILLS & HOBBIES

- Native Bilingual – English and Spanish
- Video Games and Board Games
- Video Game Development