Nicolas Nebel

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Software Engineer, *Apple* July 2024 – Now

- RealityKit Foundations team

3D Software Developer: PDG, *SideFX* June 2023 – July 2024

- Assisted character animation toolset development. Optimized rig graph manipulation, compilation, and evaluation; added rig constraint nodes.
- Created new/improved existing integrations with render farms and other studio pipelines. Developed file I/O-related SOPs, TOPs, & APIs.
- Improved evaluation & rendering perf. of sculpting tool by ~10x. Polished & added features (like sculpt deformation) with artist feedback.

AR/VR Software Engineer Intern, *Adobe* Summer 2021

- Ported an adaptive height map tessellation technique by Adobe Research to a real time graphics engine used by Adobe's software; developed a novel improvement with LOD clustering and better adaptive properties.

UE Programmer Intern, *Epic Games* Summer 2019, 2020

- Created a plugin for visualizing/manipulating the 3D motion trails of objects tracked by Sequencer. Released in UE5: bit.ly/3vhDGqj.
- Renovated curve editor tools (write-up: git.io/JUju6), created primitive spline shape creation tools. Shown here: youtu.be/j5OYgBputvs.

EDUCATION

B.S./M.S. Computer Science, *UC San Diego* Class of '22, '23

- Researched adaptive meshing under Prof. Albert Chern. Wrote a paper: *Adaptive Surface Meshes from Harmonic Maps* (arxiv.org/abs/2306.10115).

PROJECTS

- Wrote a Rust/wgpu game engine including deferred renderer, scene graph, and more for CSE 125, a senior project class (bit.ly/3WUC6GO).
- Wrote a Vulkan graphics engine for CSE 169 featuring skeletal animation, cloth simulation, and SPH fluid simulation (git.io/JUjzn).
- Rendered procedural sunset & clouds for CSE 272. (bit.ly/3wiTviN).
- Wrote OpenGL 3D medical scan renderer with volumetric, diffuse, & clearcoat materials; uses voxel cone tracing (git.io/JtInK).
- Implemented *A Practical and Controllable Hair and Fur Model for Production Path Tracing* (git.io/JPoCx) & *Adaptive Polynomial Rendering* (git.io/JPoW8).
- Wrote a few articles on intrinsic/coordinate-free geometry processing: geodesics (bit.ly/48haja2) and Delaunay triangulation (bit.ly/3H4HWj2).

Skills: C++, Python, Rust, GLSL, Vulkan, OpenGL, Blender, Houdini, Unreal