

# Nicolas Nebel

NICKWNEBEL@GMAIL.COM | GITHUB.COM/NICKWN

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

- Currently supporting development of Houdini's studio pipeline, animation, and geometry processing tools in a generalist role.

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

- Ported an adaptive height map tessellation technique developed by Adobe Research to a real time graphics engine used by some of Adobe's 3D software; later 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](https://bit.ly/3vhDGqj).
- Renovated curve editor tools (write-up: [git.io/JUju6](https://git.io/JUju6)), created primitive spline shape creation tools, improved usability of animated attachments. Shown here: [youtu.be/j5OYgBputvs](https://youtu.be/j5OYgBputvs).
  - On curve editor tools (1:26:25): “This is awesome for camera work if you’re trying to fine tune the camera, especially if you get into shakes, like camera shakes.”
  - On spline generation tools (1:52:10): “It’s awesome ... you can basically do a series of very complex curves and stuff, very quickly.”

## 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](https://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](https://bit.ly/3WUC6GO)).
- Wrote a Vulkan graphics engine for CSE 169 featuring skeletal animation, cloth simulation, and an SPH fluid simulation ([git.io/JUjzn](https://git.io/JUjzn)).
- Modeled and rendered an alpine sunset with procedural clouds for CSE 272. Won class competition ([bit.ly/3wiTviN](https://bit.ly/3wiTviN)).
- Wrote an OpenGL 3D medical scan renderer for UCSD's Immersive Visualization Lab. Supports transfer functions and volumetric, diffuse, and clearcoat materials; uses voxel cone tracing ([git.io/JtlnK](https://git.io/JtlnK)).
- Implemented *A Practical and Controllable Hair and Fur Model for Production Path Tracing* for CSE 168 ([git.io/JPoCx](https://git.io/JPoCx)) and *Adaptive Polynomial Rendering* for CSE 274 ([git.io/JPoW8](https://git.io/JPoW8)).
- Wrote a few articles on intrinsic/coordinate-free geometry processing: geodesics ([bit.ly/48haja2](https://bit.ly/48haja2)) and Delaunay triangulation ([bit.ly/3H4HWj2](https://bit.ly/3H4HWj2)).