# David Zhao Akeley - Résumé

Majors CS, Mathematics **GPA** 3.762

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Work Email dakeley[at]nvidia.com **Select Engineering Courses** 

Parallel & Distributed Computing Advanced Computer Architecture Machine Learning

Formal Langauges & Automata

**Select Math Courses** 

Complex Analysis Honors Algebra Honors Galois Theory

Mathematical Modeling

## **Professional Experience**

Nvidia Corporation - October 2020 - Present - Developer Technology Engineer

- 1. Collaborated with Nvidia Research on GPU algorithms for SDF-based 2D computational geometry. "How to Accelerate 2D Shape Processing for Manufacturing and Planning" - GTC 2023 (s51140)
- 2. Wrote Vulkan samples for VK\_EXT\_graphics\_pipeline\_library, VK\_KHR\_timeline\_semaphore, GL\_KHR\_shader\_subgroup\_shuffle, VK\_NV\_inherited\_viewport\_scissor, and ray tracing extensions.
- 3. Designed VK NV inherited viewport scissor and implemented its driver and toolchain support.
- 4. Consulted with business partners on integrating Nvidia technology: DMM, GL\_NV\_path\_rendering.

### Sholari LLC - July - September 2019 - Contractor

- 1. Worked on a tumor growth and treatment simulator written with the Unity game engine.
- 2. Implemented tools for visualizing tumor responses to treatments: line graphs, waterfall (bar) plots, and the user interface for the timeline (graph x-axis).
- 3. Wrote a multithreaded C++11 plugin for visualizing tumors & immune system responses as particle clouds, and integrated it with the single-threaded C# Unity Engine.

### Stanford University – June - September 2018 – Undergraduate Research Assistant

- 1. Helped prototype Aetherling, a Haskell-embedded domain-specific language for designing hardware image processing pipelines with automatic parallelization and static scheduling; co-authored paper with David Durst (lead author), Dr. Kayvon Fatahalian, and Dr. Pat Hanrahan.
- 2. Implemented a functional simulator of an early prototype of Aetherling.
- 3. Revised the type system to remove impediments to parallelizing line buffers.

https://aetherling.org ("Type-Directed Scheduling of Streaming Accelerators" - PLDI 2020)

# **Unpaid Internships & Projects**

MediocrePy - March - June 2017 - Independent Project https://github.com/akeley98/MediocrePy AVX-accelerated statistical image combine (averaging) Python module for astrophysics

### Tsinghua University - July - August 2016 - Summer Intern

Microlensing event light curve fitting with Python, C++, SciPy, and Matplotlib

### Jide Technology Co. - June - July 2015 - Summer Intern

Product testing and English documentation/marketing for RemixOS

### WebGL Jelly Cube Project

https://youtu.be/YwvMSeB6NzU

Reflection and refraction web demo; UCLA Fall 2017 computer graphics class third place winner<sup>2</sup>

### Myricube - Vulkan Voxel Renderer

https://github.com/akeley98/myricube

Experiments with hybrid raycasting/rasterization voxel rendering, with low-latency model updates

Proposed gem5 Partial Bypassing Patch - https://gem5-review.googlesource.com/c/public/gem5/+/27767 Refactored C++11 code from my Advanced Computer Architecture course project

Fonts: Computer Modern, FreeSans (GNU FreeFont), Ubuntu Mono (Dalton Maag & Canonical Ltd.) Full CV - https://github.com/akeley98/resum-/blob/master/cv.pdf

<sup>&</sup>lt;sup>1</sup>Signed Distance Field

<sup>2</sup>https://www.facebook.com/vasilescu.alex/posts/10155206917936588