

Resumé

David Zhao Akeley

UCLA Engineering undergraduate, expected graduation August 2020

Majors: Computer Science, Mathematics

GPA: 3.726 (April 2020)

Select Engineering Courses: Parallel & Distributed Computing, Advanced Computer Architecture

Select Mathematics Courses: Complex Analysis Honors, Algebra Honors

1 Work Experience

Sholari LLC – July - September 2019 – Contractor

1. Worked on a Unity 3D game that simulates tumor growth and provides visualizations of tumor response to various treatment options.
2. Implemented 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-sharp Unity Engine.

Stanford Aetherling Project – June - September 2018 – Research Assistant

1. Aetherling currently aims to support automatic parallelization of hardware image pipelines designed using a Haskell intermediate representation.
2. Contributed to Aetherling’s functional simulator and worked to remove impediments to parallelizing Aetherling line buffers.¹
3. Collaborated with David Durst (lead author), Dr. Kayvon Fatahalian, and Dr. Pat Hanrahan.

<https://github.com/David-Durst/aetherlingHaskellIR>

<https://github.com/David-Durst/aetherling>

MediocrePy – March - June 2017 – Independent Project

1. Created an optimized library for reducing stacks of telescope images to a single image using pixel means or medians and optional outlier rejection (sigma clipping) for noise reduction.
2. Multithreaded C core with AVX vectorization; C and Python (numpy) interface. Decreased runtime (compared to the Python implementation replaced) from hours to milliseconds.
3. Collaborated with Dr. Zheng Cai, UC Santa Cruz Astrophysics.

<https://github.com/akeley98/MediocrePy>

Tsinghua Astrophysics – July - August 2016 – Summer Intern

1. Designed a library for fitting and plotting standard microlensing event light curves given a set of brightness data for a star.
2. Used Python, C++, SciPy, Matplotlib.
3. Collaborated with Dr. Shude Mao.

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

1. Product testing for RemixOS, an Android derivative with a desktop-like interface.
2. Wrote international marketing & documentation in English.
3. Collaborated with Jason Zheng and Jeff Zhao (International Marketing Manager).

¹A line buffer device reads in an image as a stream of pixel values and outputs rectangular portions (“windows”) of the image.

2 Other Projects

WebGL Jelly Cube Project

Simple mass-spring system simulation written with Javascript, WebAssembly, and WebGL 2.0 (for refractive and reflective effects). Earned third place in the UCLA computer graphics class contest, Fall 2017.²

<https://github.com/akeley98/JellyMcJelloFace>

<https://youtu.be/YwvMSeB6NzU>

DementedIGPU – Linux Nvidia Setup Script

(Unfortunately, this project no longer works due to Bumblebee’s end-of-support).

Laptops with Nvidia graphics cards often work unreliably with the GNU/Linux operating system, especially when attempting to switch between high-performance discrete graphics and low-power integrated graphics. I wrote a Python 3 script that automatically installs and configures software needed to provide a (relatively) reliable option at boot time between high- and low-power graphics.³ I documented the script liberally in order to make it as beginner-friendly as a command line application can be.

<https://github.com/akeley98/DementedIGPU>

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

³This automation depends on the user using a system with **apt**, **systemd**, and the **GRUB** bootloader. Tested with Ubuntu 18.04.

3 UCLA Education – September 2017 - August 2020 (Expected)

First Major	Computer Science	Second Major	Mathematics	GPA	3.726 (April 2020)
	Title (<i>In Progress</i>)		Content Notes		
EE M16	Digital Systems		Verilog Lab		
EE M116C	Computer Systems Architecture				
CS M152A	Digital Design Lab		Verilog Team Project		
CS 251A	Advanced Computer Architecture		gem5 Hardware Sim Project, Graduate Course		
CS 35L	Software Construction Lab		POSIX basics (e.g. pthreads, bash)		
CS 111	Operating Systems Principles		Focus on POSIX		
CS 118	Computer Network Fundamentals				
CS 130	Software Engineering		Java Team Project		
CS 131	Programming Languages				
CS 133	Parallel & Distributed Computing		OpenMP, OpenCL, MPI, GPGPU, FPGA		
CS M146	Machine Learning				
CS 161	Fundamentals of Artificial Intelligence				
CS 174A	Intro to Computer Graphics		See WebGL Jelly Cube Project		
CS 180	Algorithms & Complexity				
CS 181	Formal Languages & Automata		Regex, CFG, Turing Machines, Decidability		
Engr 185EW	Art of Engineering Endeavors		Writing Intensive Team Project		
Math 110A	Algebra		Ring Theory		
Math 110AH	Algebra Honors		Group Theory		
Math 110BH	Algebra Honors		Ring Theory, Module Theory		
<i>Math 110C</i>	<i>Algebra</i>		<i>Field Theory, Galois Theory</i>		
Math 111	Theory of Numbers		Overview of p-adic Numbers		
Math 115A	Linear Algebra				
<i>Math 115B</i>	<i>Linear Algebra</i>				
Math 120A	Differential Geometry				
Math 131AH	Analysis Honors		Metric Spaces		
Math 131BH	Analysis Honors		Derivation, Riemann Integration		
Math 132H	Complex Analysis Honors				
Math 134	Systems of Differential Equations				
Math 170A	Probability Theory				

Note: There is no honors equivalent to the Field Theory Course.

4 West Valley College Education – 2015-2017

GPA 4.0 (upon transferring to UCLA)

Select Courses

	Title	Content Notes
Math 4B	Differential Equations	
Math 19	Discrete Mathematics	
Psych 2	Experimental Psychophysiology	Experiment Design & Paper
Phys 4D	Modern Physics	Relativity