

Aneesh Durg

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WORK EXPERIENCE

Senior Software Engineer

Feb 2021-Present

KatanaGraph Inc. — Austin, TX

- Inventing and implementing novel distributed graph pattern matching algorithms to handle large scale graph querying (tested on approx. **20B** nodes, **44B** edges)
- Implementing support for the **OpenCypher** query language.
- Implemented new matching algorithms that improved performance by up to **100x** in queries against the **LDBC** dataset (outperforming other state-of-the-art systems) and reduced memory usage by over **95%** on other datasets.
- Implemented new intermediate subgraph representation datastructures that saved up to **75%** of memory usage in some benchmarks.

Member of Technical Staff

Aug 2019-Feb 2021

Qumulo Inc. — Seattle, WA

- Extended platform support for two new hardware configurations
- Designed a solution for eliminating server downtime during upgrades from 5 minutes to under 30 seconds in a team of four
 - Used containerization to avoid potentially slow boot times
 - Used **dbus** to allow processes to break out of a container
- Helped implement the following **SMB** features
 - SMB 3.1.1 negotiation, Server-side copy, Encryption
- Helped lead migration of **python2** code to **python3**
 - Modernized all python code by adding types and checking via **mypy**
 - Proposed and implemented a python dependency verification tool for customer and cloud deployments

Systems Programming Course Lead

Jan 2017-May 2019

CS241 @ UIUC — Urbana, IL

- Development lead for assignments, Lab/Office hours assistant, Honors lecturer/mentor.

PROJECTS

Video Synth

Javascript/GLSL

<http://aneeshdurg.me/video-synth>

- A real-time video generator that chains together interactive functions to produce complex visual output
- Implemented a rendering pipeline using **WebGL** that can mix between multiple channels of output

What Is a Filesystem?

Javascript

http://aneeshdurg.me/what_is_a_filesystem

- An online interactive book/vizualization for students learning filesystem concepts.
- Implements a ext2-esque filesystem with animations to illustrate how a disk accesses occur.
- Features a terminal simulator which implements some standard GNU/Linux utilities.

CameraTheremin

JavaScript

<https://aneeshdurg.me/CameraTheremin>

- In-browser webcam gesture-based theremin (a musical instrument)
- Implemented all image processing functions required in Javascript/**WebGL**.

EDUCATION

University of Illinois at Urbana-Champaign

Aug 2015-May 2019

Recieved BS in Computer Science & Mathematics with **High Distinction**

PROGRAMMING LANGUAGES

C++, C, PYTHON, RUST, OPENCYPHER, TYPESCRIPT, JAVASCRIPT, BASH, GO, D, HASKELL, GLSL

LIBRARIES/ FRAMEWORKS

ML/AI:

CAFFE, OPENCV, PYTORCH, TENSORFLOW

Web Backend:

FLASK, TORNADO, DJANGO, NODE.JS

Web Frontend:

REACT, PEERJS, WEBGL, D3.JS, JQUERY

Containers/OS:

D-BUS, CGROUPS, SYSFS, SYSTEMD, DOCKER, LXC, SYSTEMD-NSPAWN