

Anand Dukkipati

✉ ardukkipati@gmail.com | 🌐 anandrav | in anand-dukkipati

Experience

Amazon

Austin, TX

SOFTWARE DEVELOPMENT ENGINEER II

July 2021 - Present

- Building Vega OS, a Linux-based embedded operating system for Fire TV Stick and Amazon Echo devices
- Designed and developed API architecture facilitating interoperability between TypeScript and native languages
- Wrote compiler which parses Interface Definition Language (IDL) files and generates TypeScript type declarations for React Native Turbo Modules
- Fixed memory leaks and segfaults caused by improper use of unsafe Rust for foreign function interface
- Implemented Node-API (stable C API for interacting with JavaScript environment) for Meta's Hermes JavaScript engine
- Built logging analysis tool to measure chattiness of processes on Vega OS in order to increase log throughput and decrease NVMe wear
- Built visualization tool for logging metrics using S3, Athena, and Quicksight
- Implemented input subsystem for Vega which detects button combinations and touch gestures using /dev/input

Duo Security

Ann Arbor, MI

SOFTWARE ENGINEER INTERN

May 2020 - Aug. 2020

- Built the sidebar navigation menu for the Duo Mobile App iOS app
- Built the animated, automatically refreshing UI component for one-time passwords (OTP)

University of Michigan

Ann Arbor, MI

INSTRUCTIONAL AIDE FOR EECS 490: PROGRAMMING LANGUAGES

Jan. 2021 - Apr. 2021

- Taught topics like lambda calculus, type systems, Hoare logic, parallelism, concurrency, OCaml, Rust, Haskell
- Held weekly lab section, held office hours, graded homework and exams

Education

University of Michigan

Ann Arbor, MI

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

Sep. 2017 - Apr. 2021

- **Publication:** Total-Type-Error-Localization-and-Recovery-with-Holes
- Accepted to Principles of Programming Languages (POPL 2024) and won Distinguished Paper Award

Projects

The Abra Programming Language

- Designed and implemented my own programming language
- Implemented global type inference, structs and enums with member functions, generics, trait/interface system, foreign function interface with auto-generated bindings, bytecode hybrid stack/register-based virtual machine, peephole optimizations, incremental garbage collector
- repository: <https://github.com/anandrav/abra>

Raytracer

- Implemented a raytracer that renders spheres with lambertian, metallic, and dielectric materials
- repository: <https://github.com/anandrav/raytracer>

AnandCraft

- Created a clone of Minecraft in C++ using OpenGL and SDL2
- repository: <https://github.com/anandrav/AnandCraft>

Animation Maker

- Developed an Android app available on the Google Play store for drawing traditional frame-by-frame animation
- App supports drawing cartoons, making undos/redos, and "onion-skinning"
- video: <https://www.youtube.com/shorts/ziutkd8orC0>

Skills

Languages C++, Rust, C, Swift, OCaml, Typescript, Python, JavaScript, Java