



Jake Vossen

B.S. + M.S. COMPUTER SCIENCE

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“Programs must be written for people to read, and only incidentally for machines to execute” – SICP

Education

Colorado School of Mines

Golden, CO

M.S. COMPUTER SCIENCE

January 2021 - December 2022

Completed a project in the area of programming languages, compilers, and program synthesis

- Completed Courses: Advanced Computer Architecture, Theory of Computation, Advanced Machine Learning, Theory of Cryptography
- Enrolled Courses: Advanced High Performance Computing
- Work has been accepted to PACT and the PLDI E-graphs series

B.S. COMPUTER SCIENCE

August 2018 - December 2021

- Major GPA: 3.92 || Overall GPA: 3.621
- 2020 (Transamerica) & 2019 (BP) C-MAPP Scholar: An award to recognize top CS students who are active and involved within the CS department
- Relevant courses in Computer Science
 - Algorithms
 - Data Structures (C++)
 - Compiler Design (Rust)
 - Advanced Compilers
 - Operating Systems (C)
 - Introduction to Linux
 - Elements of Computing Systems (Rust)
 - Advanced Software Engineering
 - Software Engineering (Java)
 - Database Management
 - Introduction to Computer Science (Python)
 - Computer Networks 1
 - Information, Security and Privacy
- Relevant courses in Economics
 - Energy Economics, Intermediate Microeconomics, Property Rights and Natural Resources, Economics of Water
- Study abroad: Kenya 2019 - Prepared and taught lessons on Arduinos and 3D modeling to middle school and high school aged youth and conducted entrepreneurial self-efficacy and market research

Experience

Apple

Boulder, CO

3D UI FRAMEWORKS ENGINEER (*accepted position for post-graduation*)

January 2023

- Creating UI Frameworks for Engineers to build 3D applications on Apple platforms (starting upon graduation)

Amazon

Boulder, CO

SOFTWARE DEVELOPMENT ENGINEER INTERN

Summer 2022

- Full stack (Kotlin, Java, and React) - creating and implementing API endpoints to improve the Amazon Marketing Cloud product
- Used AWS Lambda, Step Functions, CloudFormation, DynamoDB, S3, and other AWS services to build serverless, scalable solutions
- Used the Infrastructure as Code (IaC) model to create and manage AWS resources

Texas Instruments

Remote

COMPILER ENGINEERING INTERN

Summer 2021

- Added to and improved the functionality of TI's Clang/LLVM based compiler infrastructure for ARM based embedded systems, specifically around interrupt handling

Nextworld

Denver, CO

ASSOCIATE SOFTWARE ENGINEER INTERN

Summer 2018, 2019, 2020

Three summers of full time software development with backend Java and frontend Angular. My code was deployed bi-weekly, reviewed by stakeholders, and delivered to customers. I was involved in large GitHub projects that utilized advanced GitHub functionality such as code reviews and CI/CD. Nextworld used Agile Scrum methodologies, and I took part in sprint planning, retrospectives, and backlog grooming.

- Full stack developer (Summer 2020)
 - Developed Java REST API code to generate reports using Nextworld data, which included accessing PostgreSQL databases
 - Wrote TypeScript/Angular to add new features to the Nextworld report builder
- Frontend web developer (Summer 2019)
 - Used TypeScript/Angular to implement features and improvements to the Nextworld enterprise software platform
 - Used the Nativescript toolkit to improve the iOS and Android mobile apps
- Integrations specialist (Summer 2018)
 - Used Rest APIs and cloud services to implement endpoints to next generation enterprise software (C#)

Colorado School of Mines

Golden, CO

RESEARCH ASSISTANT (FALL 2020 - CURRENT)

- Studying programming languages, synthesis and optimization (Rust)
- Working towards Masters project relating to novel applications of E-graphs in repair and superoptimization
- Worked on papers accepts to PACT and the PLDI EGRAPHS series

LINUX SYSTEM ADMINISTRATOR (SUMMER 2020 - CURRENT)

- Performed maintenance, upkeep, and upgrades on 6 Ubuntu servers containing around 12 CS@Mines projects
- Provided and managed package mirrors for Arch Linux and Ubuntu
- Interviewed, selected, and trained replacement in coordination with the department head

TEACHING ASSISTANT - INTRO TO LINUX (FALL 2020)

- Held office hours twice a week, assisted students in Linux and shell scripting basics, graded and provided feedback on assignments for 220 students

LEAD U-CLIMB MENTOR / TA FOR INTRO TO COMPUTER SCIENCE (SPRING 2020 - SUMMER 2020)

- Managed U-CLIMB mentors, scheduling, task distribution, and creating / presenting training material for TAs to teach introductory computer science material to 400 students
- Performed interviews and made hiring decisions for future mentors

U-CLIMB MENTOR / TA FOR INTRO TO COMPUTER SCIENCE (FALL 2019)

- Assisted with instructing lessons about algorithms, data structures, and other introductory computer science material
- Provided one-on-one mentorship and support for Intro to Computer Science students

Datava

Remote

CS@MINES FIELD SESSION (UNPAID)

Summer 2020

- Migrated backend stack (PHP, Apache, MySQL) to a containerized system using Docker
- Got trained on scrum, product design, and other software engineering concepts
- Acted as product owner, which included developing definition of done and creating a requirements document

Valor Christian High School

Highlands Ranch, CO

IT INTERN

September 2015 - May 2018

- Managed 550 Apple devices, from hardware maintenance to software deployment and assisted in network configuration in a Jamf JSS environment, as well as assisting in budget approval and project management
- Migrated on premise servers to cloud based solutions

Skills

• Programming Languages

- **Advanced:** Python, Java, Rust
- **Intermediate:** C++, SQL, TypeScript, Kotlin
- **Beginner:** Haskell, Swift, OCaml

• Development Tools

- AWS Tools: Experience with AWS S3, CloudFormation, Lambda, EC2, API Gateway, Step Functions
- Linux Server Deployment: Docker, Apache, Nginx, Postgres
- Other Tools: Git, GitHub, Bash, \LaTeX , GNU Make

• Team Skills & Leadership: Agile Scrum team member, U-CLIMB Lead Mentor for Intro to Computer Science (see Experience), Eagle Scout

• Certifications: Associate Amazon Web Services Solution's Architect (2018-2021)

• Fun Facts: Swing Dancer, 15 unique Colorado "14er" summits, Eagle Scout, and I enjoy reading!

Writing

Toward a Unified Framework for Program Optimization, Bug-Finding, and Repair

PLDI EGRAPHS 2022

JORDAN SCHMERGE, JAKE VOSSEN, JEDIDIAH MCCLURG

Awards

2020	Fourth Best Overall Hack , Hack CU VI Hackathon	University of Colorado
2018	Best Use of Twilio API , MHacks 11 Hackathon	University of Michigan
2019	Most Random Hack , Hack CU V Hackathon	University of Colorado
2019	Second Overall , Google Passport Design Challenge	Google Boulder
2018	Presenter , C-MAPP Event - CSCI 101 Poster Presentation	Colorado School of Mines
2018	Eagle Scout , Boy Scouts of America	Troop 628

Extracurricular Activities

Association of Computing - Women (ACM-W)

Golden, CO

SECRETARY

Fall 2020 - Spring 2021

- Helped plan club meetings with goal of increasing diversity in the field of Computer Science
- Presented several talks, including talks on \LaTeX and data privacy/security
- Managed attendance tracking to distribute extra credit for a variety of courses

Colorado School of Mines OreSec Cybersecurity Club

Golden, CO

VICE PRESIDENT & COFOUNDER

Spring 2019 - Fall 2020

- Organized club meetings and gave presentations about cybersecurity topics
- Raised awareness of personal privacy and security around campus
- Gave presentation on the reverse engineering tool Ghidra

Association of Computing (ACM)

Golden, CO

MEMBER

Fall 2018 - Current

- Participated in Hackathons and other club events and programming competitions
- Volunteered for the High School Programming Competition hosted by Mines to encourage interest in CS@Mines

Linux Users Group (LUG)

Golden, CO

MEMBER

Fall 2018 - Current

- Interfaced with club to determine requirements for the servers I controlled as the CS@Mines system administrator (see experience section)
- Participated in club meetings to discuss and learn more about Linux and related subjects

Boy Scouts of America - Lone Tree, CO

Lone Tree

EAGLE SCOUT

September 2017

- Learned leadership skills through outdoor adventures including trips to Florida for sailing and Minnesota for backpacking