
Education**University of California, Santa Barbara**
PhD student in Computer ScienceSanta Barbara, CA
Class of 2025**University of California, Santa Barbara**
Bachelor of Science in Computer Science (3.94 GPA)
College of Engineering HonorsSanta Barbara, CA
Class of 2020**Work Experience****Researcher in Distributed Systems Lab***University of California, Santa Barbara*

February 2018 – Current

- Optimized key rotations by developing new protocols to eliminate race conditions while utilizing new updatable encryption primitives, resulting in an accepted research paper: QUICKeR: Quicker Updates Involving Continuous Key Rotation (PoPETS 2024)
- Developed a virtual reality application to spatialize music, resulting in an accepted paper at a top HCI conference: Spatializing Music in Virtual Reality (SUI 2023)
- Developed an augmented reality mobile application for spatial music, culminating in an accepted paper at a top HCI conference: A Spatial Music Listening Experience in Augmented Reality (UIST 2021)
- Reduced workload imbalance for distributed system backends by developing a front end cache, leading to a paper: Cache on Track (CoT): Decentralized Elastic Caches for Cloud Environments (EDBT 2021)
- Improved database query efficiency by using machine learning algorithms to predict queries

Software Engineer Intern, Oracle*Redwood City*

June 2021 – September 2021, June 2022 - September 2022

- Conducted research on optimizing for net benefit of query plan native compilation by modeling native compilation benefit and clustering to group similar query plans, leading to a research paper: Compiling Just the Best Bits: Finding the Maximum Net Benefit Shared Subexpressions in a Query Workload (in-submission at VLDB 2024)

Teaching Assistant, University of California Santa Barbara*Santa Barbara, CA*

September 2020 - Current

- Taught discussion lectures, created and graded assignments on topics in Cryptography, Compilers, Operating Systems, and Automata Theory

Software Engineer Intern, Toyon Research Corporation*Goleta, CA*

July 2019 – September 2020

- Improved accuracy of object detection in applications of cutting edge models like RetinaNet and Faster R-CNN by tuning hyperparameters and implementing image transformations
- Authored monthly progress reports by analyzing results for government contracts
- Created image classification model using ResNet to determine benefits of additional LIDAR data

Software Engineer Intern, Calix Inc.*Goleta, CA*

June 2017 – July 2018

- Developed automation framework on host computer instructing DUT to run self-diagnostics
- Debugged hardware abstraction layer on embedded systems Linux OS

Research Interests

- Data Management: Transactional Processing, Relational Databases, Distributed Systems
- Security: Key Rotation, Updatable Encryption, Homomorphic Encryption, Differential Privacy
- Human-Computer Interaction: Augmented Reality, Virtual Reality

Projects on Github: lawrencekhlim

- **QUICKeR** (2023) - developed experiments and an end-to-end system for our accepted research paper (PoPETS 2024) to test the effects of key rotation on other routine operations
- **DJ Application** (2018) - developed a web application that allows users to upload and play a track, visualize the sound waves, mix between tracks and add different sound effects
- **Air Quality Index** (2017) - scraped data and charted air quality with R during Santa Barbara fires

Awards**Data Science Award at HackUCI Hackathon — UCI**

- Simulated Monopoly with Python and determined best strategies

January 13th - 15th 2017