

SAIKUMAR YADUGIRI

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EDUCATION

University of California Santa Barbara

Masters in Computer Science

- Cumulative GPA: 4.0/4.0

Santa Barbara, CA

Sep 2021 - Present

Indian Institute of Technology, Madras

Bachelor of Technology in Electrical Engineering

- Cumulative GPA: 8.38/10
- **Minor:** Mathematics for Computer Science

Chennai, India

Jul 2014 - May 2018

PROJECTS

UCSB Course Projects

Santa Barbara, CA

Advisors: Dr. Bryce A. Boe, Prof. Benjamin Hardekopf

Jan 2018 - May 2018

- **HackOverflow:** Designed and implemented an e-commerce website to find the trade-offs and effectiveness of server scaling. Using tsung, exponentially increased the user arrival rate for several workflow scenarios.
- **VYFuzz:** Generated more than 6 GiB of data for random JSON files to find the effectiveness of probabilistic grammar-based coverage-guided fuzzing. Used vanilla JSON grammar and LR parsing algorithms. Iteratively learned JSON grammar to guide the fuzzing to increase coverage and discovered a bug in JSON parser.
- **Chat Server:** Designed and implemented a group chat system with pseudo-auth using React and Javascript.

Blockchains in Business Networks, Undergraduate Thesis ↗

Chennai, India

Advisor: Dr. Shweta Agrawal

Jan 2018 - May 2018

- Prototyped a permissioned blockchain-based business network that stores CRUD activity as a transaction.
- Worked with Hyperledger Fabric and Hyperledger Composer to model the business network.
- Developed REST APIs for the network using AngularJS and NodeJS with data stored in a LAMP stack.
- Tested the prototype business network with data of 10,000+ students in IIT Madras in various scenarios.

Block Cipher Design and Cryptanalysis ↗

Chennai, India

Advisor: Dr. Chester Rebeiro

Jan 2017 - Apr 2017

- Designed and implemented a novel 128-bit Feistel cipher with 7 rounds and 4 s-boxes called 'Descartes'.
- Designed four 16x4 compression s-boxes, which obey non-linearity. Each s-box uses a 96-bit sub-key.
- Performed linear, differential cryptanalyses and a timing attack based on the size of the 128-bit key.

Cryptopals Challenges ↗

Bengaluru, India

Self-guided

Sep 2020 - Present

- Completed the 6-week online cryptography puzzles in Python, which consists of various attack patterns on real-world cryptography implementations and attacks derived from multiple academic papers.
- Finished the week 7 extension. Currently learning Elliptic Curve Cryptography and working on week 8.

Oracle Software Security Projects

Bengaluru, India

Advisor: Dan Norris

Jul 2018 - Jul 2021

- Identified and fixed vulnerabilities in Oracle cloud database and frameworks using Oracle cloud DBSAT tool.
- Worked on Oracle cloud database credential storage to remove the usage of clear-text passwords.
- Worked on Oracle Cloud and NetSuite ERP to stop logging of passwords in logs after operation failures.
- Drafted a document about Python security measures, which should be used by cloud software developers.
- Worked on eliminating self-signed SSL certificates and gave customers the option to provide them.

RELEVANT COURSEWORK

- Applied Cryptography
- Lattice Cryptography
- Quantitative Information Flow
- Software Fuzzing
- Combinatorial Optimization
- Foundations of Cryptography
- Topics in Quantum Cryptography
- Scalable Internet Systems
- Mathematical Logic
- Combinatorics and Number Theory

TEACHING AND MENTORING EXPERIENCE

CMPSCW 8: Introduction to Computer Science

Santa Barbara, CA

Instructor: Prof. Yekaterina Kharitonova

Sep 2021 - Present

- Lead TA for the Spring 2022 offering of the course for more than 10 TAs and 3 ULAs. Helping the professor with managing and improving the course logistics apart from handling the class forum.
- Worked as a TA for the academic year 2021-2022 with more than 250 students in the course each quarter.
- Managed the class forums on CampusWire and Piazza answering 20+ questions every week.
- Other responsibilities: Conducting lab sessions, hosting office hours, grading, etc.

Miscellaneous

Bengaluru & Chennai, India

Instructor: self

Jun 2015 - Jul 2021

- As head of the InstituteWebOps club mentored 10+ coordinators and 2 super-coordinators. 2015-2018
- Mentored 3 employees in Oracle R&D India for Oracle Cloud DB and grid upgrade stacks. 2018-2021

PROFESSIONAL EXPERIENCE

Oracle R&D India

Bengaluru, India

Member of Technical Staff

Jun 2018 - Jul 2021

- Former head of Database upgrade and RAC infrastructure upgrade in Oracle public cloud on OCI and OCI-C.
- Worked on all the major public cloud offerings, ADB-D, ExaCC, ExaCS, DBCS - Classic, and ADB on ExaCC.
- Fixed 50+ business-critical bugs in Database security, VM shape-scale performance issues, Database upgrade, RAC Infrastructure upgrade, Database home backup & recovery, and dataguard reliability.
- Completed 10+ self-guided projects used by several industry pioneers.
- Worked on a parallel VM upgrade to improve the time taken by upgrade scenario by over 80%.

Qualcomm India

Hyderabad, India

Software Engineering Intern

May 2017 - Jul 2017

- Worked on 4G LTE testing and parsing automation for on-chip devices of Qualcomm 205 Mobile Platform.
- Implemented various finite-state automaton techniques in Python that improved the workflow time by 31%.
- Completed 6 testing scenarios, including signal scattering, threshold calculation, and re-establishment.

Detect Technologies

Chennai, India

GUMPS Platform GUI Development Intern

May 2016 - Jul 2016

- Worked on data visualization for real-time health monitoring for pipelines at extremely high temperatures.
- Using WxPython created a GUI installation software. With WebView and three.js, created pipe and fault model rendering from the data. Used the same three.js APIs to render the models on the GUMPS website.

TECHNICAL SKILLS

Languages	Python, Java SE & EE, Perl, JavaScript, C++11, Matlab
Database	Oracle Database Administration for 11g, 12cR2, Oracle SQL, MySQL
Web Technologies	Ruby on Rails, Sinatra, Python Flask, React, PHP, LAMP stack, Google Cloud Run
Other	Git, Tsung, Hyperledger Fabric, Kubernetes, Docker, LaTeX, Ionic

ACHIEVEMENTS

- Placed 6th among ~500 developers in Oracle Security Evangelist Cup organized by SCW platform. 2020
- Awarded 'Star Volunteer' for NSS IIT Madras chapter's 'Teach Your Neighbor' project. 2015
- Stood 878th among 150,000 students in JEE Advanced. 2014
- Secured a national rank of 374th in JEE Mains among 500,000+ students. 2014
- Among the top 1% of students with a rank of 7 in APRJC for the entrance into IITs. 2012

EXTRA-CURRICULAR ACTIVITIES

- Head of the Institute WebOps club. Designed and deployed 10+ websites for various clubs and activities. Organized student elections, and created a website for the same to ensure a secure voting process.
- Technical lead for Shastra 2016. Designed an interactive game to raise awareness for climate change and deforestation with Microsoft Kinect, Unity using Javascript.