

KRIPA SHANKER

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Github: kripa432 \diamond LinkedIn: kripa432

Programming Languages: C/C++/Python

EDUCATION

Indian Institute of Science Bangalore

Aug 2017 - Present

Ph.D. in Computer Science (*CGPA: 7.8/10.0*)

Advisor: Prof. Vinod Ganapathy

Courses: Theory and Practice of Computer Systems Security, Operating Systems, Practical Data Science, Automated Software Engineering with Machine Learning, Game Theory, Program Analysis and Verification, Design and Analysis of Algorithm

Institute of Engineering and Rural Technology, Prayagraj

Aug 2013 - Jul 2017

B.Tech.(Hons.) in Computer Science & Engineering (*Percentage: 76.96%*)

RESEARCH EXPERIENCE

Privacy Preserving Machine Learning

August 2020 - Present

Indian Institute of Science Bangalore

- Building a framework to enable privacy preserving machine learning on public cloud platforms.

Porpoise

January 2018 - July 2020

Indian Institute of Science Bangalore

- In this project we built a system *Porpoise* to port commodity applications to Intel SGX .
- Porpoise needs minimal porting effort and doesn't require any modification to application's source code.
- It took around 10,000 lines. of code in C and C++ to implement this system.
- Source Code: <https://github.com/iisc-cssl/porpoise>

PUBLICATIONS

An Evaluation of Methods to Port Legacy Code to SGX Enclaves

ESEC/FSE'20

Kripa Shanker, Arun Joseph, Vinod Ganapathy

- In this work we evaluated three different models to port legacy application to the Intel SGX enclaves.
- We report on our attempt to port a handful of real-world application benchmarks (including OpenSSL, Memcached, a Web server and a Python interpreter) to SGX enclaves with each model.
- Our evaluation focus on the cost and merits of each model from perspective of effort required to port code under each model, the effort to re-engineer an application to work with enclaves, the security offered by each model, and the runtime performance of the applications under these models.

TEACHING EXPERIENCE

Algorithms and Programming

August 2019 - December 2019

Instructors: Prof. Satish Govindrajana and Prof. Viraj Kumar

Operating Systems

January 2019 - April 2019

Instructors: Prof. Arkaprava Basu and Prof. Vinod Ganapathy

Theory and Practice of Computer Systems Security

August 2018 - December 2018

Instructor: Prof. Vinod Ganapathy

COURSE PROJECTS

Pintos Operating System

January 2018 - April 2018

Course: Operating Systems

- *Pintos* minimally support threads, user programs, virtual memory, file system.
- In this project we extended the above four functionality of *Pintos*.
- It took 3,000 lines of modifications in C to strengthen the support of above functionality.

Automated Program Repair

January 2018 - April 2018

Course: Automated Software Engineering with Machine Learning

- Implemented a machine learning model for automated program repair for a toy programming Language using *Seq2Seq* model.

WORK EXPERIENCE

Tata Consultancy Services

July 2016 - August 2016

Remote internship

- Developed Online College Placement Portal

Institute of Engineering and Rural Technology

November 2013 - July 2015

Junior Developer

- Revamped design and development of college website from scratch.

ACCOMPLISHMENTS

- Best Paper Award in EECS Research Student's Symposium July 2020
- Selected for ACM India summer school on Cybersecurity and Data Analytics, IIT Delhi July 2019
- Secured 45th position in ACM ICPC regionals held at IIT Kharagpur December 2017
- Secured All India Rank of 445 among 94,000 students in GATE (CS/IT) March 2017
- Secured 29th rank in India in *Codevita-V* organized by *Tata Consultancy Services* August 2016

PROFESSIONAL ACTIVITIES

- **Faculty Development Workshop 2019:** Assisted in conducting lab session on memory error attacks during faculty development workshop on Digital Security.
- **CSA Undergraduate Summer School 2018:** Delivered a 45 minutes talk on *Smashing The Stack For Fun And Profit* to 80 students in summer school.

EXTRACURRICULAR

- **Open Day 2019:** Started Lab Demos as part of *Open Day* in 2019 in which 16 labs out of 32 labs at Department of Computer Science and Automation, Indian Institute of Science came forward to demonstrate cutting edge research going on in their respective labs.
- **Technovation 2016:** Started and managed *codervation* as part of Annual Tech-fest of Institute of Engineering and Rural Technology, which hosted 10 events related to computer science which include online programming contest, web design, fast boot etc. in which more than 450 students participated.
- **Online Programming Contest:** Conducted an online programming contest on *codechef* in which more than 500 students participated across the globe.