

VINAYAK TRIVEDI

Final Year Undergraduate
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EDUCATIONAL QUALIFICATIONS

Year	Degree	Institution(Board)	CGPA/%
July'16 – June'20 (expected)	B.Tech, CSE	Indian Institute of Technology, Kanpur	9.0/10.0
2016	XII	Star International School, Ranchi (CBSE)	92.0%
2014	X	JNV East Singhbhum (CBSE)	10.0/10.0

SCHOLASTIC ACHIEVEMENTS

- AIR 147, JEE Advanced 2016
- Got A* Grade for Exceptional Performance in Courses, **Operating Systems** and **Computer Systems Security**
- Certificate for **Excellent Tutor**, ESC101 (Introduction to Programming), IIT Kanpur, 2020
- Academic Excellence Award by IIT Kanpur, 2016
- All India Rank 70, KVPY 2016 (SX Stream)

RESEARCH EXPERIENCE

NetSandbox - A generic Sandbox

Under Prof. Debadatta Mishra Jan 2019 - Present

- Research Project on developing a Generic sandbox for any application which is transparent to the end-user, by using an interface to split VFS syscalls for Host files and Socket based system calls for X server.
- Established the Security Guarantee and Threat Model of the system. Designed architecture, and implemented a generic 'three-way' efficient Communication channel between VM and Host, to transfer syscalls information from one side to the other.
- Implemented the Kernel Module code for interception and Split-Handling of various critical syscalls like **Select**, **Poll**, **Fcntl**, **Ioctl**, **Mmap**, **Writev**, **Dup**, **Recvmsg**.
- Worked on unit-testing and Benchmarking framework for both GUI and non-GUI applications, by simulating User Keyboard and Mouse events behaviour through Uinput.
- Successfully tested applications **Wget**, **SSH**, **Scp**, **Sftp**, **elinks**, **Pdfviewer**, **Gedit** and **Thunderbird** to be running in this Quarantined Architecture with almost-local-like Performance and CPU Usage.

WORK EXPERIENCE

Research And Development Intern

Sprinklr India May 2019 - July 2019

- Worked on a generic Profiler in python, to pin-point Java Threads blocking CPU/IO/Network in a system on Spike, by concurrently using Jstack and top utility. Devised a multi-variable scoring system for threads to reduce false-positives, after a series of observations.
- Currently in Production and helped bring down the CPU usage from **90% during Spike to 50%** by pointing out the inefficient code blocks.
- Implemented a Mongo based Cache for metadata of Logs stored in S3, to reduce the Query time of Spark. Reduced the initial Response time of **120 seconds to 3 seconds**.

Tech Development Intern

PharmEasy India May 2018 - July 2018

- Implemented a Redis-based Cache, after performing benchmarking of in-memory Databases namely Aerospike, Memcached and Redis, to Cache the common Database queries. Performed Load-testing of the Cache framework and devised an Adaptive strategy for TTL of the Cache based on access patterns of the Table.
- Achieved about **50 percent drop** in Database queries of tables cached, and **25 percent drop** in response-time.

MISCELLANEOUS

- Developed AM Portal, A PHP backend based Q/A Forum Portal for college.
- Mentored 6 students to build a custom package manager.
- Mentored 2 students to build a light nginx-like server.
- Mentored 12 students to build a Movie Recommender App.

PROJECTS

HackTheL3

Course Project - CS665 github://mayanksha/CS665-RA September, 2019

- A Research Project on Reverse-Engineering the Cache Replacement Policy of L3 Cache, using various cache-set and slice aware data-access patterns.

SIP Portal

E-Cell, IITK December 2017

- An Automation Portal which acts as a channel amongst Startups, Students and College for facilitating Internships.
- Actively used by SIP, IITK since two years with 500+ Student Registrations each year.

Alertify

Microsoft Codefundo++ github://vinayaktrivedi/alertify Oct'2018

- A Web App on Django, to Alert users about impending disasters in real-time based on their locations, using Text-processing methods like Stemming, Keyword Extraction and Sentiment Analysis on Tweets.
- Runner-up in Microsoft Codefundo++ 2018.**

Bhagvada Geeta ChatApp

Course Project - CS252 October 2018

- A Mobile app to display the Geeta-shlokas relevant to your problem query, using various NLP Techniques and 7-dimensional representation of Shlokas on 7-sins.

Ozit

An Interpreter for Oz, written in Oz. github://Ozit Sept'2019

Gorakshak

Compiler for Golang, written in Python. github://G0rakshak Jan'2019

GemOS

Course Project, Operating Systems github://https://gemOS Aug'2018

VAAD SAMVAAD

NodeJs+PHP backend based, Social Networking website. github://facebook_copy Jan'2018

Cloud2.0

A cryptographically Secure Cloud Storage Web App, written in Golang. github://Cloud2.0

POSITIONS OF RESPONSIBILITY

- Head, Web, Students' Placement Office, IITK** (2019-2020)
System Admin of SPO Servers, Responsible for Scaling, Deployment And Maintenance of various Automation Portals. Introduced many Automation features like Scraping of JAFs and core functionalities like **Walk-In Interview**, **Mail-on-news**, **Tracker** etc.
- Tutor, ESC101 (Introduction to Programming) (Twice)**
Responsible for conducting Tutorial sessions for a batch of 40 students, and helping to set up Lab Assignments, Exams and Quizzes for a class of Strength ~500.