



Ritik Roongta
Computer Science & Engineering
Indian Institute of Technology, Bombay

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B.Tech.
Gender: Male
DOB: 20-10-1999

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2021	
Intermediate	CBSE	Bhagat Public School	2017	94.00%
Matriculation	CBSE	Aditya Birla Public School	2015	10

Pursuing **Minor** degree in Shailesh J. Mehta School of Management (**SJMSOM**)

SCHOLASTIC ACHIEVEMENTS

AIR 48	JEE Advanced (IIT-JEE)	(2017)
99.96 percentile	JEE Mains	(2017)
0.1% Certificate of Merit	Chemistry and Physics (AISSCE)	(2017)
National top 1%	NSEP and NSEC	(2016)
KVPY & NTSE Fellowship	Govt. of India	(2016)
Pratibha Scholarship	Aditya Birla Group	(2018)

RESEARCH EXPERIENCE AND INTERNSHIPS

Network Security Research Intern

(Apr - Aug '20)

Guide: Giovanni Vigna | **UCSB**

California, USA

- Developed a kernel-assisted network fuzzer (**KANF**) using linux kernel driver modules and networking tools
- Interleaved the fuzzer with American Fuzzy Lop (**AFL**) to achieve **coverage-guided** fuzzing
- Created a pool of **10,000+** debian network packages for testing, finding vulnerabilities and reporting **CVEs**
- Evolved fool-proof testing environment for kernel modules using **QEMU** and ubuntu kernel images

Software Intern

(Apr - Jun '20)

Guide: Pratyush Rathore | **A.P.T Portfolio**

Delhi, India

- Reported and **patched** crucial **bugs** in the source code implemented for placing orders at the exchange
- Processed the BSE and NSE exchange **order-book** with a daily **traffic** in excess of **4 crores** orders and analysed the order delays to develop **dynamic latency** based exchange simulation model
- Fabricated exchange and algorithmic trading servers **interplay** flowcharts for teaching and training purposes

Cyber Security Research Intern

(May - Jul '19)

Guide: Rahul Tyagi | **Lucideus**

Delhi, India

- Hardened** CentOS linux using 239 remediations as provided by **CIS** (Center for Internet Security)
- Prepared a detailed documentation covering attacks and mitigation techniques on **OWASP** Top 10 Attacks **2017** (Open Web Application Security Project) along with their video **POCs** (proof of concept)
- Developed a robust and thorough session flow on **Blockchain Technologies** for emerging Bitcoin enthusiasts

Solar Diagnostics and Databasing

(Dec '18)

Guide: Pranav Maheshwari | **PV Diagnostics**

Mumbai, India

- Developed a **SQL Database** to incorporate the current-voltaic data received from solar power plants
- Devised a system comprising of polynomial and exponential terms to satisfy the desired IV plots and outliers using python libraries and achieved an accuracy of more than **85 percent**

KEY PROJECTS

Malware and Botnet Detection Tool

(Jul - Aug '20)

HCL HACKIITK | **Hackathon**

IIT Kanpur, India

- Developed a python based **Malware Detection** tool to categorise a binary file using its assembly as malware or benign using an **ML trained** model and achieved an accuracy of **97%**
- Created a Botnet Detection tool for classifying botnet network traffic based on botnets like **Vinchuca**, **Storm**
- Secured **19th** All India Rank for this project with **12000+** participants from over **10+** countries

Text Summarisation

(Sep - Nov '19)

Guide: Prof. Ganesh Ramakrishnan | **Course Project**

AIML

- Developed an NLP based model for text summarisation using **Extractive** and **Abstractive** techniques
- Achieved an accuracy of **79%** over **LSA** (Latent Semantic Analysis) model and a **rouge-R** score of **48%**
- Adopted **LSTM** model with Seq2Seq algorithm and word embeddings for classification over **kaggle** datasets

Match Table Lookup Logic for SDN Router

(Jan - Apr '19)

Guide: Prof. Ashwin Gumaste | Course Project

Digital Logic Design

- Implemented a match table lookup for a router which returns the data stored in the table as well as updates the address in the table with the incoming data using a **simple dual Port BRAM**, arbiter and FIFOs
- Ensured fast lookup by **parallelising** the search algorithm with linear lookup in first stage followed by index based lookup in the second stage across different tables with the help of FIFOs

Secure Personal Cloud (SPC)

(Aug - Nov '18)

Guide: Prof. Soumen Chakrabarti | Course Project

Software Systems Lab

- Simulated a **client-server cloud** based file management system supporting multiple clients simultaneously
- Ensured **security of data** on server using **Block level file encryption** cryptographic algorithms
- Developed a mobile friendly **Web Client** using **Django** for well-organised display all files in server

ACADEMIC PROJECTS

Twitter Simulation

(Feb - May '18)

Guide: Prof. Amitabha Sanyal | Course Project

Programming Paradigms Laboratory

- Developed an attractive **microblogging** platform supporting all basic functionalities of Twitter Inc.©
- Devised an **Object-Oriented abstraction** to handle password authenticated database of every account
- Programmed in scheme-racket language using 2htdp/image, racket/gui/base and racket/draw libraries

Wireless Game Console

(May - Jul '18)

Institute Technical Summer Project | Electronic and Robotics Club

IIT Bombay

- Designed an **Air Mouse** (small remote) which recognises its orientation & give signals for yaw, pitch and raw
- Integrated Raspberry Pi 3, gyroscope (MPU6050), Picamera and I2C Protocol to establish remote side interface
- Used **OpenCV3**, **Numpy**, **Matplotlib** libraries to implement image processing algorithms for the Air Mouse

TEDx Event

(Mar - Apr '19)

Guide: Prof. T.T. Niranjana | Course Project

Project Management

- Tailored a **foolproof** project management plan for a **TEDx event** targeting the marginalized strata of society
- Outlined a well-thought-out **cost** and **time estimations** using various project management techniques like **Gantt Chart**, work breakdown structure (WBS), network diagram and tools like Project Libre
- Predicted and resolved different risks and issues using strategically pre-planned **Risk Matrix** and **RPN Table**

POSITIONS OF RESPONSIBILITY

General Secretary

(Jul '20 - May'21)

CSE Association | CSE Department

IIT Bombay

- Headed a team of **24+** **students** for organising various remote and in-person sports and social events along with student **wellness** webinars with an annual budget in excess of **INR 3.5 lakhs**
- **Ideated 7+** engaging events to be conducted in an online manner during the remote semester due to CoVID-19
- Enhanced student outreach manifold by revamping the CSEA website and increasing its **online visibility**

Department Sports Secretary

(Apr '18 - Apr '19)

CSE Association | CSE Department

IIT Bombay

- Organized a plethora of **Sports and Recreational Activities** for the students in the department
- **Innovated** new games and **introduced** different Sports categories to enhance overall **girls participation**

REVA Mentor

(Nov '17)

REVA Fest | India's Largest Fest for Underprivileged Kids

IIT Bombay

- Mentored **under-privileged** students in various **Recreational Activities** and **interactive sessions**
- Successfully organized the **REVA fest** with annual attendance of over 200 under-privileged students

TECHNICAL SKILLS

Certifications

IBM Blockchain Essentials, IBM Bitcoin 101

Programming Languages

C++(Proficient), Python, Bash, L^AT_EX, Java, Lisp

Software Skills

Git, MATLAB, MySQL, AutoCAD

Courses

Networks, Data and System Security, Internet Security & Cryptography

EXTRACURRICULARS

Gold Medal

Badminton Team event, Raftaar, IIT Bombay

(2018)

Certificate of Recognition

Tinkerathon, Asus Computing

(2018)

Bronze Medal

Badminton General Championship

(2017)

3rd position

CSE Department Badminton Open

(2017)

3rd position

Short Movie Making Competition, Freshiezza

(2017)