ROHIT RANJAN

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EDUCATION

2018–present	**Bachelor of Technology**, *Indian Institute of Technology*, Kanpur, *CGPA- 9.23*/10* Major in Computer Science & Engineering
2018	**Grade XII**, *Krishna Public School*, Patna, *Result: 92%*
2016	**Grade X**, *Jawahar Navodaya Vidyalaya*, Saran, *CGPA-10.0/10.0*

WORK EXPERIENCE

May'21–present
report

Cisco Systems Inc, Technical Undergraduate Intern
Software Developer,Team Falcon, Mentor: Chinmaya Kumar Panda
- Performed Load testing of **Broadworks** User billing Apis, got successful smoke test outcomes
- Design **Grafana** dashboard to show User Billing Api performance statistics with analysis of available metrics like request volume, report reliability from influxDB data source
- Scripted **Jmeter** jmx code from scratch to create stress on server handling User Billing Apis

May '19–Jul' 19
github

Summer of Code, IIT Kanpur
IIT Kanpur, Supervisor: Prof. Sandeep Shukla
- Developed a dynamic and scalable web application using **Django** from scratch as an initiative to support NGOs of India by keeping track of records of users and their donation history
- Implemented various functionalities that allows registered users to choose from various NGOs to donate, as well as the registered NGOs to list their mission and necessities
- Developed whole Backend using Django and Django-REST, used ReactJS to develop Frontend
- Established a Payment Portal to handle all type of transactions using Paytm payment API

OPEN SOURCE CONTRIBUTION

Apr'20–May'20
github

Boost C++ Organization
Software Developer, Github Boost.Astronomy
- Integrated Boost.Units with the base coordinate system and restructured all the classes to make them compatible with Boost.Units to provide a robust astronomical coordinate system
- Implemented **3D-Arithmetic Operations**(eg. Unit vector, CrossProduct etc..) for the existing Astronomical Coordinate system using Boost::Geometry and Boost::Units library
- Wrote unit tests for existing and newly added features

PROJECTS

Jan '21-May'21
github

C-Compiler-CS335: arcx86
Course Project, Compiler Design, Prof: Amey Karkare
- Implemented a fully working Standard-**C** language compiler in **Python3** from scratch supporting almost all standard C Syntax and functions, with target **X86_64** Intel Acrchitecture
- Wrote complete code for conversion of intermediate code to target specific architecture (**Intel i7**) **Assembly** language with efficient register allocation and stack space optimization
- Supported advanced features like struct return, infinte level of recursion with constant fold optimization, got almost same compilation time and accuracy comparing to gcc compiler
- Used Python3-pip PLY library to implement scanner and parser, made use of Hierarchial Symbol table structure concept for semantic analysis and intermediate code generation

Jan '21-May'21
github

Computer Networking
Assignments, Computer Networks, Prof: Swaprava Nath
- Implemented **HammingCode**(n,k) algorithm to encode pixels of an image and devised an self-correcting implementation for decoding and error correction
- Established two way communication between two servers using Socket API, used Stop & Wait ARQ(Automated Repeat reQuest) and **Go-Back-N ARQ** protocols for message transfer. Validated incoming messages through CRC(Cyclic Redundancy Check)
- Integrated Distributed Bellman-Ford Shortest Path Routing Algorithm for robust generation of **routing tables** at hops in Network Topology of size of n routers

Sep '20-Dec'20	**Building GemOS**
github	*Course Project, Operating Systems*, Prof: Debadatta Mishra

- Implemented file system syscalls in **C** including open, write, pipe, dup etc.
- Constructed multilevel **paging management** system for syscalls like mmap, munmap and mprotect with support for huge page of size 2 Mega Bytes
- Developed a message queue mechanism that facilitates **inter-process communication** using pipes, included features like broadcasting,blocking messages
- Designed a simple **debugger** with support for features like setting/removing breakpoint, retrieval of register info, backtrace to analyse call stack of process

Jan '20-May'20	**Decrypting Caves Game**
github	*Course Project, Modern Cryptology*, Prof: Manindra Agarwal

- Explored and Analysed different existing classical and modern **Cryptographic** methods and their weaknesses
- Completed all 7 levels of game by designing **chosen plain-text** attack for weaker models of AES,DES and RSA and extracted level entry keys to decrypt data.

ACADEMIC ACHIEVEMENTS

2018-19	**Academic Excellence Award** , amongst Top 6% students of the department
2018	**Academic Excellence Award** , given to Top 10% of the batch
Present	Expert rated on **Codeforces** with maximum rating of 1673
2018	**All India Rank 367**, Joint Entrance Examination Mains among 1.5 million candidates
2019	**All India Rank 1** , Indian Engineering Olympiad
2018,19 &20	**Samsung Star Scholar**, awarded to students graduated from J.N.V and performing academically well in IITs

TECHNICAL SKILLS

Programming:	C/C++, Java, Python3, Haskell, Bash Scripting, Verilog
Development:	HTML5, CSS, Javascript, SQL, React Native, InfluxDB
Utils/Platform:	Linux Shell Utilities, Git, Vim, Matlab, Octave,LaTeX
Libraries/Apis:	ScoketAPI, Numpy, Matplotlib, Pandas, TensorFlow, Scipy

RELEVANT COURSEWORK

Data Structures and Algorithms*	Fundamentals of Programming in C*	Multivariate Calculus*
Linear Algebra	Probability*	Discrete Mathematics
Computer Organization	Operating Systems*	Software Development and Operations
Compiler Design*	Modern Cryptology*	Database Management System*
Introduction to ML*	Computer Networks*	Computational Methods in Engg.*

(*): excellent performance in course

MINI/SELF PROJECTS

Jan '20–Mar '20	**FlappyBirdAI**, *github*

- Created a simple bird game using Python Pygame library and Implemented Neat AI algorithm

Apr '21–May'21	**StockMarket**, *github*

- Designed Schema for a stock market and analysed query runtime for different database engines

MISCELLANEOUS

Aug '19	Senior **Web Executive** in Udghosh'19, IIT Kanpur
Oct '20	Developed a **decoder** in Haskell to decipher monoalphabetic substitution ciphers
Dec '20	Wrote a python script to cartoonize an image using **opencv** library[github]
Jan '20	**Mentor** in ACA project organized by Dept. of Computer Science & Engineering
May '21	Created grafana panels to analyse system statistics, used python **psutil** to get data