

Rahul Gupta

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Educational Qualifications

2019 (Expected)	Dual Degree (B.Tech and M.Tech)	IIT Kanpur	8.9*/10.0
2014	Class XII (CBSE)	DAV Public School, Kota	94.60%
2012	Class X (CBSE)	DAV Public School, Kota	10.0/10.0

*current

Scholastic Achievements

- Secured AIR – 174 among 1.26 lakh students in **Joint Entrance Examination (Advanced)** 2014.
- Selected for **Kishore Vaigyanik Protsahan Yojana (KVPY)** fellowship in Stream SX in 2013.
- Secured Rank – 4 in statewide **Rajasthan Pre Engineering Test (RPET)** 2014.
- Secured 3rd position in FPGA Design Challenge, at Techkriti 2016, Intercollegiate Tech Festival of IIT Kanpur.

Internships

Microsoft – IT, Hyderabad:

MAY'17-JULY'17

Software Engineering Intern

- The project aimed to migrate partners with their users from Partner Membership Center(PMC) to Partner Center(PC).
- Studied and Analyzed the architecture of Partner Center comprising of Reseller Web, Service and Frontdoor.
- Formulated the design and Proof of Concept to make a responsive UI using WebCore CSS and Angular JS features.
- Implemented Asynchronous Actions using \$q service and post data using \$resource for AAD account creation.
- Thoroughly tested the functionality of written code with the help of Jasmine tests.
- Learned the Agile Methodology of Software Engineering by iterating through reviews and corrections.

Projects

[Blockchain] Distributed App to Log User Activity on OARS

AUG'17-NOV'17

Mentored by Prof. Sandeep Shukla

- Project aimed at logging activities of students, professors and admins on Online Academic Registration System.
- Used PKI to log activities on a privileged and distributed blockchain using Multichain.
- Implemented Principal of Least Privileges on a central MySQL server and a permission server for blockchain stream.

[Computer Systems Security] Securing Zoobar Web Server

JAN'17-APR'17

Course Project, CS628, mentored by Prof. Sandeep Shukla

- Studied the architecture of Zoobar Web Server based on OKWS model for building fast and secure web services.
- Exploited security vulnerabilities using Control Hijacking Techniques, Privilege Escalation Techniques, Buffer Overflow and browser-based attacks like SQL Injection, Cross Site Scripting, Cross Site Request Forgery and Cookie Thefts.
- Improved applications security using Stack Canaries, Privilege Separation and Server-Side Sandboxing.

[Compilers] Compiler For Scala

JAN'17-APR'17

Course Project, CS335, mentored by Prof. Amey Karkare

- Developed a Scala to NASM Compiler targeted at x86 architecture with support for basic operations, conditional and Iterative statements, arrays, type checking, basic type inference, nested functions and recursion.
- Implemented Lexical Analyzer, Parser, Abstract Syntax Tree, Intermediate Code and Assembly Code Generator.
- Incorporated extra features like default parameter values for functions/classes and lists storage type.

[Operating Systems] Extending NachOS

AUG'16-NOV'16

Course Project, CS330, mentored by Prof. Mainak Chaudhuri

- Implemented System calls pertaining to Fork, Exec, Join, Sleep and Exit.
- Implemented UNIX, First in First Out, Round Robin and Shortest Job First job scheduling algorithms.
- Implemented Shared Memory, Semaphores, Condition variables and Page Replacement Algorithms.

[Human Computer Interaction] Predicting Laptop User's Gaze

JUL'16 – DEC'16

Mentored by Prof. Gaurav Sharma

- Used Pygame for developing user interface to train and test model.
- Used face and landmark detection algorithms to capture eye patches.
- Trained an SVM over quantized Local Binary Pattern features for predictions.

[Databases] AuctionBase

JUL'16 – DEC'16

Course Project, CS315, mentored by Prof. Medha Atre

- Analyzed, parsed and bulk loaded the large volume of data from eBay and designed a good relational schema for it.
- Implemented triggers and various integrity constraints in order to maintain data integrity and consistency.
- Developed back-end to manage Auctionbase data using SQLite and user friendly front-end for real time auction.

[Web Application] Eliza Plus - Online Chatbot

JUL'16 – NOV'16

Course Project, CS251, mentored by Prof. Arnab Bhattacharya

- Developed a web application capable of sending emails, storing personalized user's data, stream videos etc. with login.
- Streamlined Eliza implementation in JavaScript with syntax matching and AJAX calls to interact with server.
- Used web scraping, GeoIP Database for weather info, google news API etc. in Django app to relay information.

[Data Mining] Searching Tool for Related Queries

MAY'16 – JUN'16

Mentored by Prof. Nitin Gupta

- Scraped an online support forum by tracking AJAX requests and using beautiful soup with multithreading in python.
- Used Word based indexing and calculated scores as a function of common words and penalty for short doc matches.
- Used these **Term Frequency– Inverse Document Frequency** Scores to rank the questions and return the top matches.

[Machine Learning] Wildlife Conservation Project

DEC'15 – JAN'16

Mentored by Prof. Prabhakar TV

- This project aims to identify areas vulnerable for tigers in a national park to minimize their killing by poachers.
- We generated our data facilitating formation of clusters and incorporated attributes like terrain, festivals, time etc.
- Visualized our data on maps using **Google Maps API** for better comprehension.
- Classified data using **SVM (Support Vector Machine)** to get model for our hypothesis.

[Image Processing] T-Shirt Recognition

MAY'15 - JUL '15

Mentored by Programming Club, SNT Council, IIT Kanpur

- This project simplifies buying a T-Shirt of one's liking by just taking a photograph and uploading it on the software.
- Same or similar T-Shirts appear in the results with their price comparison across websites with link to buy them.
- Developed a Windows Desktop Application using c sharp in visual studio and scraped T-Shirt data in python.
- Used SSIM technique with image filters to compute similarity index between images.

[Web Application] Game to Cure Depression

MAY'16 – JUN'16

Mentored by Prof. Nitin Gupta

- Prepared a game aimed to deliver cognitive bias modification to treat depression.
- Users are supposed to click on images with happy people quickly to earn good points.
- Used Django on the server side for handling AJAX and other requests.
- Game is implemented using JavaScript and scores are continuously kept in sync with server.

TECHNICAL SKILLS

Programming Languages	C, C++, Python, HTML, CSS, PHP, JavaScript, BASH, SQL
Software, Utilities and Libraries	Matlab, LaTeX, Django, Visual Studio, Git, Z3 Solver, Angular JS

RELEVANT COURSES

Computer Science: Computer Systems Security, Compilers, Operating Systems, Machine Learning, Computer Networks, Database Management Systems, Data Structures and Algorithms, Computer Organization, Theory of Computation

Mathematics: Discrete Mathematics, Probability and Statistics, Real and Multivariable Calculus, Linear Algebra, Abstract Algebra, Differential Equations

POSITIONS OF RESPONSIBILITY

Student Guide, Counselling Service, IIT Kanpur

JUN '15 – APR'16

Actively involved in counselling of 6 freshmen, helped and guided them in their induction to the institute.

Supervised registration and orientation of more than 800 students assisted by other student guides.

Secretary, Debate and Discussion Society

AUG '15 – APR'16

Conducting debate sessions like parliamentary debates, group discussions and model debates along with MUN within the campus to enhance the confidence in expression.

EXTRA-CURRICULAR ACTIVITIES

- I like to read fiction and play cheerful songs on my acoustic Guitar.