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Academic Qualifications

Year	Degree/Certificate	Institute	CPI/%
2018	M.Tech(Computer Science and Engineering)	Indian Institute of Technology, Kanpur	9.2/10
2018	B.Tech(Computer Science and Engineering)	Indian Institute of Technology, Kanpur	8.8/10
2014	Class XII (CBSE)	DAV Public School, Kota	94.6%
2012	Class X (CBSE)	DAV Public School, Kota	10/10

Work Experience

- **Microsoft (IDC-SO), Hyderabad** *Software Engineering Intern* (*May'17-Jul'17*)
  - Aimed at migrating partners and their users from **Partner Membership Center(PMC)** to **Partner Center(PC)**
  - Formulated the design and Proof of Concept to make a **responsive UI** using WebCore CSS and Angular JS features.
  - Thoroughly tested the functionality of written code with the help of Jasmine tests and C# **unit tests**.
  - All code was reviewed, perfected, and pushed to production while following agile software development.
- **National University of Singapore, Singapore** *Research Attachment Intern* (*May'18-Nov'18*)
  - Empirically investigated the transitions in the size of DAGs for compiled knowledge representations of CNF formulae.
  - Designed novel techniques for uniform, weighted and projected sampling of solutions. .
  - Implemented the ideas in Python and optimized them by **profiling** with perf.
  - Released new tool - KUS beating state-of-the-art tools SPUR and UniGen2 by 1.7× and 8.3× geometric speedup.

Technical Skills

Programming Skills:	Python, C++, Scikit-learn, x86 Assembly
Platforms:	Linux, Windows
Software & **Utilities:**	Git, Latex, GNU Plot, Octave, Visual Studio, Shell Scripting, Z3 Solver, Django
Web Technologies:	HTML, CSS, Javascript, Bootstrap, AngularJS, PHP

Projects

- **Distributed app to log user activity** , Prof. Sandeep Shukla *Blockchain* (*Aug'17-Nov'17*)
  - Aimed at **temper proof logging** of activities of students, professors and admins on 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.
  - Work accepted for workshop publication at ISRDC, IIT Bombay.
- **Identifying important citations in paper**, Prof. Purushottam Kar *Machine Learning* (*Aug'17-Nov'17*)
  - Aimed to use the content and context of the citation to decide its usefulness on AI2 Meaningful Citations Data Set.
  - Evaluated features like citations per section, number of references,similarity between abstracts, Pagerank, etc.
  - Implemented a novel feature to score the importance of a citation from the referencing sentence using bag of words.
  - Compared the performance of SVM with different kernels, Decision Tree and K-Nearest Neighbors.
- **Lyric generator** , Prof. Harish Karnick *Computer Systems Security* (*Mar'18-Apr'18*)
  - Built and experimented with various machine learning models to generate poems/lyrics by learning them.
  - Leveraged keras and tensorflow libraries for training word/character based models using **LSTM**, **Neural Network** models using Glove vectors. Built customized markov models involving probabilities, POS tags and rhyme checks.
  - Compared the performance of all the devised methods.
- **Securing Zoobar web server** , Prof. Sandeep Shukla *Computer Systems Security* (*Jan'17-Apr'17*)
  - 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.
- **Compiler for Scala** , Prof. Amey Karkare *Compiler Design* (*Jan'18-Apr'18*)
  - 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.
- **Eliza Plus - online chatbot** , Prof. Satyadev Nandakumar *Databases* (*Sep'16-Nov'16*)
  - Developed a web application capable of sending emails, storing personalized users 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

- **Predicting laptop user's gaze**, Prof. Gaurav Sharma *Human Computer Interaction* (*Jul16 Dec16*)
  - Used Pygame for developing UI and Dlib's face and landmark detection algorithms to capture eye patches.
  - Trained an SVM over quantized Local Binary Pattern features for predictions.
- **AuctionBase** , Prof. Medha Atre *Databases* (*Sep'16-Nov'16*)
  - 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.
- **NachOS** , Prof. Mainak Chaudhari *Operating Systems* (*Sep'16-Nov'16*)
  - Extended NachOS's standard system call library by implementing system calls such as Fork, Join and Exec.
  - Implemented page replacement algorithms: First In First Out, Random Page Allocation, Least Recently Used(LRU) to assess relative performances under different conditions.
  - Coded process scheduling algorithms: First In First Out, UNIX Scheduling, Shortest Job First, Non-Pre-emptive, Round Robin to evaluate relative performances under various scenarios.
- **Searching tool for related queries**, Prof. Nitin Gupta *Data Mining* (*May'16-Jun'16*)
  - 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.
- **Wildlife conservation**, Prof. Prabhakar TV *Machine Learning* (*Dec'15-Jan'16*)
  - 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 data using Google Maps API and classified it using SVM (Support Vector Machine).
- **T-Shirt recognition** *Image Processing* (*Sep'16-Nov'16*)
  - This project simplifies buying a T-Shirt of ones 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# in visual studio and scraped T-Shirt data in python.
  - Used SSIM technique with image filters to compute similarity index between images.
- **Game to Cure Depression**, Prof. Nitin Gupta *Web Application* (*Sep'16-Nov'16*)
  - Prepared a game aimed to deliver cognitive bias modification by watching happy people to treat depression.
  - Game is implemented using JavaScript and AJAX calls while scores are kept in sync with server based on Django.

Hackathons

- **Universal Windows App** *Microsoft's Code.Fun.Do* (*Sep'15*)
  - Aimed at connecting customers to nearest service providers for quick and effective solutions to their problems.
  - Used GPS data and Bing maps API to index service centres within near radius of customer.

Relevant Courses

Computer Systems Security	Natural Language Processing	Machine Learning
Blockchain and Its Applications	Data Structures and Algorithms	Computer Networks
Operating Systems	Theory of Computation	Principles of Database Systems
Compiler Design	Computer Networks	Computer Organization
Probability and Statistics	Fundamentals of Computing	Logic for Computer Science

Scholastic Achievements

- Received an A* grade, for exceptional performance in **Mathematics: Real and Multivariable Calculus**
- Selected for prestigious Kishore Vaigyanik Protsahan Yojana (KVPY) fellowship in Stream SX in 2013.
- Secured AIR 174 among 1.26 lakh students in Joint Entrance Examination (Advanced) 2014.
- Secured Rank 4 among thousands of students in statewide Rajasthan Pre Engineering Test (RPET) 2014.
- Secured 3rd position in FPGA Design Challenge, at Techkriti 2016, Intercollegiate Tech Festival of IIT Kanpur.

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** (*Jan'16*)
  - Conducted debate sessions like parliamentary debates, group discussions and model united nations.

Extra Curricular Activities

- Part of the team that secured first position in inter-pool Mock United Nations event in GALAXY 14.
- Active member in Card & Board Games Club
- Taking pictures which have an aesthetic appeal to them.
- Reading fiction and playing cheerful songs on my acoustic Guitar.