Sourav Anand

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Educational Qualifications:

Year	Degree	Institute	CPI/%
2017 (expected)	B.Tech - Computer Science and Engineering	IIT Kanpur	8.2*
2013	Class XII - CBSE	Maa Bharti, Kota	87%
2011	Class X - CBSE	DAV Bariatu, Ranchi	9.8

* - at the end of sixth semester

Areas of Interest:

Operating Systems, Computer Architecture, Distributed Systems and Computer Networks

Academic Achievements:

- Secured **All India Rank 1210** in JEE (Advanced), 2013 given by 150,000 students
- Secured **99 percentile** in JEE (Mains), 2013 given by 1.2 million students
- Secured **All India Rank 6** in National Cyber Olympiad organised by Science Olympiad Foundation in 2011
- Declared **Runner up** in Microsoft code.fun.do 2015 at IIT Kanpur

Internships:

- **Adobe Systems**, *Noida*   *(May 2016 - July 2016)*
  - Implemented a client based query auto completion feature.
  - Text data from a given set of documents was used to generate an n-gram model which in turn was used to make the suggestions (most probable query)
  - Designed and implemented data structures for distributed storing of the n-gram model consuming minimal space
  - Designed and implemented algorithms to download only the required data for current input (not the whole model) to quickly compute the suggestions in real time and display the top few suggestions having the highest relevance score
  - Added support for previous words suggestions, spell corrections, search history, synonyms, stop words etc.

- **MAQ Software**, *Hyderabad*   *(May 2015 - July 2015)*
  - Worked in a team of six to develop an app for Microsoft excel which would help thousands of sellers in easily uploading and updating targets for sales persons for current fiscal year
  - The app loads data for a selected Business Metric and geography of the seller into an excel sheet where a user (based on his permissions) can either view the entries, update them or add new entries for sellers and set their targets
  - Added support to verify the entries and show the errors(if any) before updating the database

Projects and Developments:

- **Automatic summarization of functions**,
  Undergraduate Project under Prof. Subhajit Roy   *(Aug 2016 - Current)*
  - Implemented a pass in LLVM which can automatically summarize functions of a program.
  - The summaries are generated with respect to a specific instructions(for example free(ptr)) and contain the information of the path which is required for the execution of the given specific instruction in terms of parameters of the function and global variables
  - The generated summaries can be used for analysis of programs with respect to the given specific instruction

- **Group File Sharing Application**,
  Software Engineering under Prof. TV Prabhakar   *(Aug 2016 - Current)*
  - Implemented an application using Flask which enables a group of people to share files among themselves
  - The application is based on peer to peer protocol and no central server is required for using the application. Each client is connected to the group is responsible for sending/receiving files and other important information such as active and inactive client list, shared file list of each client etc.

- **Memory Access Scheduling Algorithm**
  Course Project in Computer Architecture under Prof. Mainak Chaudhari   *(March 2016 - April 2016)*
  - The goal of the project was to implement a scheduling algorithm for DRAM to reduce the program execution time by improving row hits and being fair to other threads.
  - Designed and implemented an algorithm on memory simulator USIMM which reduced the execution by 3% and the energy delay product by 6% as compared to the FCFS algorithm for the given workload

- **Compiler for Java**
  Course Project in Compiler Design under Prof. Subhajit Roy   *(January 2016 - April 2016)*
  - Developed a compiler for a subset of Java for x86 architecture
  - Implemented a Lexer, Machine Code Generator and Grammer rules for parsing in python
  - The developed compiler supports all basic operations, iterative statements, conditional statements, nested loops, functions with recursion support, function overloading, handling variable scopes and multidimensional arrays

- **Vehicle Classification And License Plate Recognition**
  Course Project in Machine Learning under Prof. Harish Karnick   *(January 2016 - April 2016)*
  - Tried to detect and classify relevant objects in a video stream (Surveillance Video) in real time. In case of four wheelers, tried to detect and recognise license plate number
  - Experimented with SIFT, HOG, Convolutional Networks for detections and classification of objects.
  - Used gradients followed by morpohological operations to find the licence plate area for four wheelers and then used pretrained OpenALPR model on proposed number plate region

- **NachOS**
  Course Project in Operating Systems under Prof. Mainak Chaudhari   *(August 2015 - November 2015)*
  - Implemented System calls such as Fork, Exec, Join, Sleep and Exit
  - Implemented First in First Out, Round Robin, Shortest Job First and UNIX job scheduling algorithms
  - Implemented Shared Memory, Semaphores, Condition variables and Demand Paging

- **JEE at Ease**
  Microsoft code.fun.do   *(February 2015)*
  - Developed an application for Windows in C# to help students in preparation of JEE in an organised way
  - The app is used to store important questions with their answers and retrive them later on either in a continuous practice mode or a time bound test mode

- **Gesture Recognition**
  Summer Project under Programming Club   *(May 2014 - June 2014)*
  - Developed an application in C++ using OpenCV capable of recognising gestures performed and executing the command associated with that gesture
  - Webcam feed was used to get input and the path of pre-determined bright color was tracked which was then matched with existing paths and after finding a match, the associated action was performed

- **Peer to Peer File Backup Service**
  ACA, CSE, IIT Kanpur   *(January 2014 - May 2014)*
  - Developed an application for Linux in Python to create backup of files on another computer connected to the same server using peer to peer networking protocol

Technical Skills:

- **Languages:** C, C++, C#, Python, HTML, JavaScript, Bash, Verilog, Assembly, PHP
- **Others:** GNU Octave, OpenCV, Git, MySQL, LaTeX, Visual Studio, SSMS

Relevant Courses:

- Fundamentals of Computing
- Data Structures and Algorithms
- Discrete Mathematics
- Introduction to Logic
- Computer Organisation
- Operating Systems
- Theory of Computation
- Machine Learning: Tools, techniques, applications
- Compiler Design
- Computer Architecture
- Computing Laboratory
- Computer Networks *
- Introduction to Software Engineering *
- Advance Operating Systems For Embedded Systems, Pervasive Computing and IOT *

* - Ongoing

Positions Of Responsibility:

- **Co-ordinator**, *Association of Computing Activities(ACA), IIT Kanpur*   *(August 2015 - August 2016)*
  Organizing League of Programmers lecture series, maintaining Online Judge, organizing events such as Microsoft code.fun.do, Happy Hours, departmental freshers, departmental trip and departmental farewell.
- **Academic Mentor**, *Counselling Service, IIT Kanpur*   *(April 2014 - March 2015)*
  Conducted classes, doubt clearing sessions and mentored academically weaker students for the course Fundamentals of Computing