

# ANUJ NAGPAL

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## EDUCATIONAL QUALIFICATIONS

Year	Qualification	Institute	Performance
2014-18	Bachelor of Technology, Computer Science and Engineering	Indian Institute of Technology, Kanpur	9.3/10.0
2014	AISSCE (Class XII - CBSE)	B. M. M. Sen. Sec. School, Mandi Killianwali	96.2%
2012	AISSE (Class X - CBSE)	B. M. M. Sen. Sec. School, Mandi Killianwali	10.0/10.0

## ACADEMIC ACHIEVEMENTS

- Received **Academic Excellence Award** from IIT Kanpur for the Academic Session 2014-15 with SPI of **10 (on a scale of 10)** in 2 semesters.
- Secured an **All India Rank of 190** in **JEE Advanced 2014** given by about 150,000 shortlisted candidates from all across the country.
- Secured an **All India Rank of 220** and **State Rank of 4 in Punjab** in **JEE Main 2014** given by about 1,500,000 students.
- Conferred with **Kishore Vaigyanik Protsahan Yojana (KVPY) Scholarship** in 2012 by IISc Bangalore.
- Qualified National Standard Examination in Chemistry (**NSEC**) and National Standard Examination in Astronomy (**NSEA**) in 2013.

## INTERNSHIP

- Summer Analyst, Goldman Sachs Services Bengaluru, Securities Division** May'17 - Jul'17  
(Mentor: Anshuman Shankar, Vice President, Securities Division)  
**Role:** Development, maintenance and testing of firm's RFQ system used for electronic trading of single name CDS and corporate bonds.  
**Major Tasks Completed:**
  - Added support for trading fractional-year tenor single name CDS for a major venue in New York and London.
  - Implemented automated scenario tests for e-trading of corporate bonds on a major venue in New York. Anticipated reduction of manual testing effort before every code release.
  - Unification of and making robust FIX protocol message dictionaries used for communication during electronic trade negotiations.**Auxiliary Learning:**
  - Familiarity with Java Object Oriented Programming and all the phases of SDLC.
  - Introductory knowledge on trading mechanics of corporate bonds and credit derivatives.

## PROJECTS

- Finding Vulnerabilities and Improving Security of ZooBar Server** Dr. Sandeep Shukla
  - Crafted overflow, format string, denial of service and browser based attacks and implemented principle of least privileges in the web server.
- Deep Reinforcement Learning to Train Against Pong AI** Dr. Piyush Rai
  - Implemented Q-Learning and Policy Gradient methods in TensorFlow and trained agent was eventually able to win matches.
- Joint Seat Allocation Algorithm for IITs, NITs, IIITs and other GFTIs** Dr. Surender Baswana
  - Implemented a stable marriage algorithm complying with all the rules of JoSAA 2016 and improved the time taken by 70% for some boundary cases.
- Java to x86 Assembly Compiler** Dr. Amey Karkare
  - End-to-End compiler from scratch using Python Lex and Yacc (PLY) incorporating short circuiting, register allocation optimization and classes.
- Extending Nach Operating System** Dr. Mainak Chaudhuri
  - Extended the standard system call library and implemented several process scheduling and page replacement algorithms for NachOS.
- Online Academic Registration Portal** Dr. Piyush Kurur and Dr. Satyadev Nandakumar
  - Made an online portal using Ruby on Rails framework allowing students to request courses during registration and instructors to accept/reject them.
- Applications of Graph Algorithms in Discrete Markov Chains** Dr. Avijit Khanra
  - Made a Matlab Library to easily calculate strongly connected components, periodicity, expected number of visits and hitting probability for all states.
- Prutor Interface and Database Improvements** Dr. Amey Karkare
  - Added admin side modules and features to Prutor, a Node.js platform used to teach programming to 800 first year students every year in IIT Kanpur.
- Game Strategies using Combinatorial Game Theory** Dr. Rajat Mittal
  - Analyzed winning strategies and helpful heuristics for some classical combinatorial games like Nim, Hex, Domineering and Tic-Tac-Toe.

## POSITION OF RESPONSIBILITY

- Coordinator, ACA, Departmental Student Body, CSE IIT Kanpur**

Leadership	<ul style="list-style-type: none"><li>Conducted ACA Summer School open to students from all colleges with around 500 registered students and 5 courses.</li><li>Mentored 10 first year students for a semester long project teaching them essential programming languages and utilities.</li><li>Responsible for all the departmental activities ranging from freshers' for new batch to farewell to outgoing batch.</li></ul>
Initiatives	<ul style="list-style-type: none"><li>Floated semester projects for 150 first year students under the mentorship of experienced seniors to promote coding culture in campus.</li><li>Organized hackathons, programming contests, workshops and talks in collaboration with some reputed companies.</li><li>Increased student-faculty and intra-department interaction by organizing happy hours, senior-junior sessions and team fun activities.</li></ul>

## RELEVANT COURSES

<ul style="list-style-type: none"><li>Computer Systems Security (A*)</li><li>Computing Laboratory (A*)</li><li>Operating Systems</li><li>Data Structures and Algorithms</li></ul>	<ul style="list-style-type: none"><li>Computer Networks</li><li>Principles of Database Systems</li><li>Compiler Design</li><li>Computer Organization</li></ul>	<ul style="list-style-type: none"><li>Probabilistic Machine Learning</li><li>Applied Stochastic Processes</li><li>Design and Analysis of Algorithms</li><li>Microeconomics (A*)</li></ul>	<ul style="list-style-type: none"><li>Machine Learning Techniques</li><li>Time Series Analysis</li><li>Probability and Statistics</li><li>Macroeconomics</li></ul>
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- A\* for exceptional performance

## TECHNICAL SKILLS

- Programming Languages:** C, C++, Python, Java, Bash, HTML, CSS, JavaScript, PHP, SQL, R, Go, Scala, Verilog, Assembly
- Software & Utilities:** Git, LaTeX, Vim, Gnuplot, GNU Octave, MATLAB, Ruby on Rails, Node.js, IntelliJ, Autodesk 3ds Max