

# Ranveer Aggarwal

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*Indian Institute of Technology, Bombay*

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## Education

- 2016 **Bachelor of Technology**, *Indian Institute of Technology, Bombay*, CGPA - 7.11.  
Honours in Computer Science and Engineering with Minors in Industrial Design
- 2012 **Intermediate/+2**, *Lady Anusuya Singhanian Educational Academy*, Agg - 92.80%.
- 2010 **Matriculation**, *Hem Sheela Model School*, CGPA - 9.60.

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## Key Academic Projects

- Autumn 2014 **Transformer Animation** *Prof. Parag Chaudhuri*
  - Modeled, textured, and animated a transformer bot from scratch with OpenGL
  - Implemented Bezier curves for camera movement and keyframing for the animation
  - Developed an interactive environment for the bot with inter-object collisions
- Autumn 2014 **Movie Database and Recommendation** *Prof. NL Sarda*
  - Developed a Java-PostgreSQL based online social network for movie enthusiasts
  - Optimised the database using ER-Modelling and Relational Algebra
  - Used tools like Maven, Websockets, Version Control and Templating
- Summer 2014 **E-Learning Academy (MOOC)** *Prof. Kameswari Chebrolu*
  - Developed plugins and fixed bugs for the existing web-platform built in Django
  - Analysed user behaviour through data-logging and optimised the existing codebase
  - The platform is based on the flipped-classroom model that promotes student-centred learning, collaboration and improves content accessibility
- Spring 2013 **Chess with Artificial Intelligence** *Prof. Amitabha Sanyal*
  - Developed a chess game in PLT Scheme using in-built GUI Toolkit in DrRacket
  - Implemented the **Minimax Algorithm** with **Alpha-Beta Pruning** for the AI
  - Utilised heuristics that ensured smooth gameplay till a tree-depth of 3
- Spring 2014 **2D Simulation of an Orrery** *Prof. Parag Chaudhuri*
  - Simulated a mechanical model of Solar System using gears instead of gravity
  - Used **Box2D** as the core engine for interaction between mechanical components
- Spring 2014 **VHDL Based Monorail Controller** *Prof. Ashwin Gumaste*
  - Implemented a Monorail controller in VHDL, interfaced with Spartan FPGA
  - Developed a Finite State Machine for the simplified Monorail controller system
- Autumn 2012 **Paddle Ball Game** *Prof. Abhiram Ranade*
  - Designed the classic brick breaker game in C++ using **Particle Physics**
  - Modelled randomly generating levels with varying difficulty and ball speeds

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## Other Coding Projects

Spring 2014 **Classroom Note Maker (Kapi)** *Microsoft code.fun.do*

- Designed an app that, along with normal text, typesets maths in  $\text{\LaTeX}$  format
- Worked in a team of 4 to program a parser that recursively breaks down the  $\text{\LaTeX}$  chunks into smaller components and parses them at the token level.

Summer 2013 **Android PC Controller** *Institute Technical Summer Project (ITSP)*

- Developed an application that enables an Android device to act as a Bluetooth-based virtual hardware interface to a PC (Windows/Linux)
- Used Java's **Robot** class to assign PC's commands to strings passed over Bluetooth

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## Achievements

- National
- Bagged the **first position** at both institute and national level, *code.fun.do 2014*, a hackathon cum accelerator program by Microsoft India Development Center
  - Achieved **third position** out of 250+ teams at *Hackcon '14*, the national inter-collegiate hacking contest organised by Microsoft
  - Participated in the *software for social cause* competition at the 2014 Inter-IIT Technical Meet, where IIT Bombay stood **third overall**.

- Institute Level
- Stood **first** in *autonomous line follower* robotics competition for freshmen
  - Secured **third** position in RC Car building competition among over 100 teams
  - Stood **second** in *remote-controlled football-playing bot* making competition

- Pre University
- Attained an **All India Rank of 104** (*State Rank 2*) among 3.75 lakh participants in *National Level Science Talent Search Examination (NSTSE) 2012*
  - Secured **All India Rank 1** in *International Olympiad of Science (IOS) 2009*
  - Achieved an **All India Rank of 53** in *National Science Olympiad (NSO) 2008*

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## Professional Experience

Summer 2014 **Product Development Intern** *Trumplab*

- Co-developed a web-application (*Textslate*) that provides simple, user-friendly tools enabling teachers communicate better with both students and their parents
- Currently being tested across 5 schools in Mumbai

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## Technical Skills

Advanced C++, PYTHON, HTML/CSS, SCHEME,  $\text{\LaTeX}$ , MIPS-ASSEMBLY

Intermediate JAVA, JAVASCRIPT, PHP, VHDL, BASH

Basic VERILOG, PROLOG, Matlab, LabView

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## Extra-Cirricular Activities

- Coding
  - A FOSS contributor, familiar with working on large codebases (like Firefox)
  - Developed an application, titled *Rumor Roll!* in php using Yahoo! Boss API and YQL that outputs rumours related to the given query at Yahoo! HackU 2013.
  - Built a JavaScript based game, on the lines of popular game, Chain Reaction
  - Mentored several freshmen teams at Scratch Day 2013, IIT Bombay
- Misc
  - Participated in several speaking events, including **MUNs** and **debates**
  - Completed the year-long course by **National Sports Organization** in **Squash**
  - Enthusiastic in swimming and water adventure sports

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## Positions of Responsibility

- 2014-15 **Manager** *Web and Coding Club, IIT Bombay*
  - Leading a two-tier team consisting of 9 co-ordinators to encourage programming as a hobby rather than just a tool for academic aid
  - Incorporating new events in the club's agenda to increase participation in open source, promote algorithmic programming as a sport and help people develop software better
  - Mentored 15 freshmen teams under Institute Technical Summer Projects out of which 9 successfully completed their projects and 3 came up with prototypes
- 2013-14 **Web Secretary** *Hostel 3, IIT Bombay*
  - Conducted intra-hostel web development workshops and competitions
  - Designed and maintained the hostel website, ensuring transparency of all hostel council activities and monetary transactions

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## Salient Courses Undertaken

- Core Database and Information Systems, Computer Graphics, Computer Networks, Computer Architecture, Operating Systems\*, Compilers\*, Artificial Intelligence\*, Implementation of Programming Languages\*, Data Structures, Abstractions and Paradigms in Programming, Software Systems, Design and Analysis of Algorithms, Computer Programming and Utilization
  - Breadth Logic Design, Discrete Mathematics, Human Computer Interactive Design, Technology and Animation
- \* marked courses will be completed by April 2015