

# Ranveer Aggarwal

*Indian Institute of Technology, Bombay*

## Personal Details

Name **Ranveer Aggarwal**  
Date of Birth **20th February 1995**  
Address **Hostel 3, IIT Bombay, Powai, Mumbai (MH) - 400076**  
Ph. Number **+91 9867744457**  
Gender **Male**

## Education

2016 **Bachelor of Technology**, *Indian Institute of Technology, Bombay, CGPA - 7.25.*  
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.*

## Key Academic Projects

- Spring 2015 **Artificial Intelligence Based Projects** *Prof. Pushpak Bhattacharyya*
- o Built an Automated Theorem Prover to search for proofs of arbitrary formulae under the axioms of Propositional Calculus
  - o Developed a circuit simulator in Prolog
  - o Programmed a text to speech program based on graphemes and phonemes
- Autumn 2014 **Transformer Rendering and Animation** *Prof. Parag Chaudhuri*  
and  
Spring 2015
- o Modeled, textured, and animated a transformer bot from scratch with OpenGL
  - o Developed an interactive environment for the bot with inter-object collisions
  - o Used motion captured data in the form of BVH inputs to animate the transformer
  - o Rendered a few frames photorealistically in Renderman
- Autumn 2014 **Movie Database and Recommendation** *Prof. NL Sarda*
- o Developed a Java-PostgreSQL based online social network for movie enthusiasts
  - o Optimised the database using ER-Modelling and Relational Algebra
  - o Used tools like Maven, Websockets, Version Control and Templating
- Summer 2014 **E-Learning Academy (MOOC)** *Prof. Kameswari Chebrolu*
- o Developed plugins and fixed bugs for the existing web-platform built in Django
  - o Analysed user behaviour through data-logging and optimised the existing codebase
  - o 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*
- o Developed a chess game in PLT Scheme using in-built GUI Toolkit in DrRacket
  - o Implemented the **Minimax Algorithm** with **Alpha-Beta Pruning** for the AI
  - o 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
- Spring 2015 **Ongoing Projects**
- Lightcuts: A scalable framework for computing realistic illumination (Computer Graphics)
  - GeekOS: Working on implementing scheduling policies on an instructional OS
  - Compiler: Building a compiler from scratch with modules like lexical analyser, parser, semantic analyser and code generator

## 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.

## Achievements

- National
- Stood **third** out of 300+ teams at *Build the Shield '15*, Microsoft's national inter-collegiate hacking contest
  - 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*

## Professional Experience

- Winter 2014 **Season of KDE Intern** *KDE*
- Redesigned and redeveloped PlanetKDE, KDE's blog aggregator built on rawdog
  - Built a mobile friendly, KDE design scheme compliant, flat interface with social media plugins, working closely with KDE's design team and the dev community

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, L<sup>A</sup>T<sub>E</sub>X, OPENGL, RENDERMAN  
Intermediate JAVA, JAVASCRIPT, PHP, VHDL, BASH, MIPS-ASSEMBLY, QT-C++  
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