Ranveer Aggarwal

Indian Institute of Technology, Bombay

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 Singhania Educational Academy*, *Agg - 92.80%*.

2010 **Matriculation**, *Hem Sheela Model School*, *CGPA - 9.60*.

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

Other Coding Projects

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

- Designed an app that, along with normal text, typesets maths in LaTeX format
- Worked in a team of 4 to program a parser that recursively breaks down the 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

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*

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

Technical Skills

Advanced C++, Python, HTML/CSS, Scheme, LaTeX, MIPS-Assembly

Intermediate Java, JavaScript, PHP, VHDL, Bash

Basic Verilog, Prolog, Matlab, LabView

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

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

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`