

Dhruv Kanti Bhanushali

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Education

Year	Institute - Board	CGPA / Percentage
2015 –	Indian Institute of Technology, Roorkee – <i>B. Tech. in Engineering Physics</i>	7.433 / 10
2012 – 2014	Jaipuria School, Navi Mumbai – <i>Class XII (PCM + Computer Science)</i>	91.2%
2004 – 2012	Seventh-Day Adventist Higher Secondary School, Navi Mumbai – <i>Class X</i>	95.8%

Projects

Analysis of electron cloud densities in particle accelerators – *High-energy accelerator Physics*

The aim of the project is to analyze and formulate a theory explaining the density of the photoelectron cloud formed in the tube of a particle accelerator due to photons emitted by accelerated charges.

Supervisor: Dr. Puneet Jain, *Department of Physics, IIT Roorkee*

Augmented virtual keyboard – *Electronics and computer programming*

Created a keyboard that can be typed on after projection onto a flat surface. Used an array of infrared LED and computer vision to detect tap co-ordinates and convert them to typed characters on the computer.

Equipment: Projector, IR array, IR webcam, OpenCV, Adobe Animate and Python

LecTut – *Android app development*

Developed an Android app of LecTut, the Intranet study portal of IIT Roorkee, used by faculty and students to share study material such as lecture slides and notes, to improve its accessibility from smartphones.

Backend: JSON API in Django (Apache + mod_wsgi)

Frontend: Android application

Nobel – *Node.js app development*

Nobel is an app that allows people to ping the central computer at IMG lab to see who else is present there. Upon request the app plays a ring and opens a group chat between IMG and everyone who opens the app.

Backend: Django authentication (Apache + mod_wsgi) + Express views (pm2) + Socket.IO for chat

Frontend: HTML, CSS and vanilla JavaScript

Parche – *Java (Spring MVC and Hibernate) app development*

Parche is a bug reporting, tracking and discussion platform for individuals and teams. Planned on Spring for speed and Angular for flexibility, the app is under development.

Backend: Spring MVC

Frontend: HTML, CSS (Semantic UI) and Angular

Rethink – *Python (Django) app development*

Developed an inventory management system, a time-scheduling system and a static homepage for Rethink, the tinkering lab of IIT Roorkee, to manage resources (networked and offline) and scheduling at Rethink.

Backend: Django (Apache + mod_wsgi_py3)

Frontend: Django templates, HTML, CSS and jQuery

IJAS2017 – *Website development*

Developed the website of Indo-Japan Accelerator School 2017, IIT Roorkee, in HTML and CSS with a bit of JavaScript. This website contains information about IJAS, previous' IJAS material and a form for registration.

Static: HTML, CSS (Semantic UI) and jQuery

Java project evaluation engine – *Code evaluation engine*

Developed an engine to evaluate entire projects written in Java, by running tests and comparing the output against a preset input. This engine uses Ant but is flexible enough to add drop-in support for other languages and build automation tools. It also has support for databases and incorporates Java security policies.

Technologies: Python, Ant, Java, JUnit, Hamcrest, MySQL, RabbitMQ

Positions of responsibility

HackerEarth – *Software development intern*

HackerEarth is an Bangalore based startup that provides talent assessment and innovation management services to enterprises. I interned for two months and created a project evaluation module with support for Java on Ant, third-party libraries, database connections, security policies and JUnit tests.

Information management group, IIT Roorkee – *Project leader*

Information management group is the students' group that created, maintains and upgrades the intranet portal Channel-i. I developed and improved many important apps, including the revamped internship/placement portal of IIT-R.

Indo-Japan Accelerator School 2017 – *Local organizing committee member*

IJAS was a collaboration between Indian and Japanese institutions to foster learning in the field of particle accelerators. I was a core member of the local organizing committee of IJAS2017, credited with building and maintaining the official website of the school.

Artificial intelligence and electronics section, IIT Roorkee – *Mentor*

ArIES is the section of the Hobbies club devoted to advancing the field of artificial intelligence and electronics in IIT Roorkee. After taking up electronics as my proficiency in my sophomore year, I successfully completed one project with ArIES and have now been promoted to *mentor*.

Skills

Software applications: Wolfram Mathematica, MathWorks MATLAB + Simulink, National Instruments Multisim

Computer languages known: FORTRAN, Python and Java (including scientific libraries and popular frameworks)

Human languages known: English (SRW), Hindi (SRW), Marathi (SRW), Gujarati (SR), Kutchi (S)

Computing skills

Databases: MySQL, PostgreSQL, SQLite and MongoDB

Python: Django and Django REST

Node.js: Express, Socket.IO and Adonis

Java: Spring MVC, Swing and JavaFX

Android: Java/Kotlin logic and XML user interface

JavaScript: Angular and React

Courses taken:

Physics related courses

PHN-008: Electromagnetic theory

PHN-102: Analog and digital electronics

PHN-104: Thermal and statistical Physics

PHN-207: Mechanics and relativity

PHN-209: Mathematical Physics

PHN-211: Quantum Physics

PHN-204: Atomic, molecular and laser Physics

PHN-206: Elements of condensed matter Physics

PHN-208: Nuclear Physics and applications

PHN-210: Microprocessors and peripheral devices

PHN-214: Applied optics

PHN-313: Signals and systems

PHN-315: Lasers and photonics

PHN-317: Plasma Physics and applications

PHN-327: Physics of nanosystems

Computer related courses

MAN-001: Mathematics-I

MAN-010: Optimization techniques

EEN-112: Electrical sciences

MIN-108: Mechanical engineering drawing

PHN-103: Computer programming

PHN-205: Engineering analysis and design

MTN-105: Electrical and electronic materials

PHN-311: Numerical analysis and computational Physics

Achievements:

- Ranked 3110 (GEN) among about 1.5 lakh (equivalent to 150 thousand) students in JEE Advanced.
- Successfully completed two apps overnight as a part of code.fun.do 2016 and 2017.

- One of the most prolific developers in IMG (and therefore, in IIT Roorkee).
- Scored top grades (A+) in all computer related courses.

Interests:

Apart from software development I am also interested in theoretical Physics. I like to unwind with a good film or TV series episode. You'll find me plugged to my music almost all the time. I also like to read (almost every genre) and write (non-fiction, humor).

References:

Dr. Puneet Jain

Assistant professor,
Department of Physics,
IIT Roorkee

Dr. Rajesh Kumar

Assistant professor,
Department of Physics,
IIT Roorkee

Dr. Arumugam Paramasivan

Associate professor,
Department of Physics,
IIT Roorkee

Details:

For further information, please contact me via any of these social media:

GitHub Portfolio	https://dhruvkb.github.io/
GitHub	https://github.com/dhruvkb/
LinkedIn	https://www.linkedin.com/in/dhruvkb/
Facebook	https://www.facebook.com/dhruv.k.bhanushali/