



Nishanth Koushik
Computer Science & Engineering
Indian Institute of Technology Bombay

120050041
UG Third Year (B.Tech.)
Male
DOB: 20 APR 1994

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2015	9.07
Intermediate/+2	Sri Sankara Vidyalaya, Bhilai	Sri Sankara Vidyalaya, Bhilai	2012	94.80
Matriculation	DAV Public School, Bilaspur	DAV Public School, Bilaspur	2010	10.00

WORK EXPERIENCE

- **Visiting Researcher, University of Waterloo** (under Prof. Joanne M. Atlee, summer 2014)
Worked on a semantically configurable translator from BSML (a family of extended state-machine modelling languages) to SMV (Symbolic Model Verifier)
- **Teaching Assistant, IIT Bombay** (autumn 2014)
Acted as Teaching Assistant for the course Discrete Structures for second-year undergraduates.

ACADEMIC PROJECTS

- **Monorail Simulation** (guided by Prof. Ashwin Gumaste, spring 2014)
Simulated the working of a small-scale monorail system in VHDL, using hardware elements to emulate acceleration, top speed, braking and emergency halting mechanisms.
- **Traffic Light Control System** (guided by Prof. Ashwin Gumaste, spring 2014)
Created a state-machine-based system in VHDL to control traffic lights at a busy city street intersection, to minimize cumulative waiting time and avoid dangerous simultaneous traffic routes.
- **Escalator Simulation** (guided by Prof. Parag Chaudhuri, spring 2014)
A simulation of an escalator, implemented in popular two-dimensional physics engine Box2D.
- **Ray-Tracer** (guided by Prof. Amitabha A Sanyal, spring 2013)
A powerful fully-featured ray-tracer for rendering multiple objects and light sources in 3D, including features like object composition, depth of field, anti-aliasing, specular highlights, transparency and diffuse reflections and shadows, implemented in MIT-Scheme using the built-in graphics package. Done for a course on functional programming.
- **Two-Player Chess** (guided by Prof. Abhiram G Ranade, autumn 2012)
A simple, attractive and user-friendly implementation of two-player chess in C++, using a graphics library called simplecpp, done for an introductory computer programming course.
- **Modeling Cash Flow in ATM's** (guided by Prof. Ganesh Ramakrishnan, spring 2013)
Done for a statistics course. Modeled cash withdrawal from multiple ATM's in a city, taking into account factors like population and social status. Used time-dependent distribution functions to model variation in cash flow with time of day, and predicted efficient ATM-refill schedules.

ACADEMIC ACHIEVEMENTS

- **All-India Rank 3** in IIT-JEE 2012 among more than 500,000 students
- **All-India Rank 81** in AIEEE 2012 among more than 1,000,000 students
- **All-India Rank 10** in KVPY 2011; received the KVPY scholarship from the Gov. of India
- Stood in the **top 10** at the national level a total of 8 times in 8 years in the National Science and Cyber Olympiads conducted by the Science Olympiad Foundation.
- Among the **top 35** students in the country in the Indian National Mathematics Olympiad (INMO) 2010 and the Indian National Chemistry Olympiad (INChO) 2012
- Mentored thousands of students preparing for their 10th and 12th class Board examinations through an online question-answer forum as a Student Mentor for Topperlearning.net, a joint initiative between Horlicks and Topper TV.

TECHNICAL SKILLS

Programming Languages: C++, Java, Python, Scheme, Standard ML, Prolog, Assembly, SMV

Other: HTML/CSS, SQL, Scilab, Latex, UNIX/Linux

CAMPS ATTENDED

- The ITCSC-INC Winter School, a lecture series organized by the Chinese University of Hong Kong, in 2014
- The International Mathematics Olympiad Orientation cum Selection Camp (OCSC) at HBCSE, Mumbai, in 2010, 2011
- The International Chemistry Olympiad (ICHO) OCSC at HBCSE, in 2012
- The KVPY Vijyoshi Camps held at IISER, Trivandrum and IISc, Bangalore, in 2011

AREAS OF INTEREST

Computer Science:

Analysis and Design of Algorithms, Computational Complexity, Software Development

Mathematics:

Pursuing a minor in Mathematics

Interested in pure mathematics, esp. number theory, logic, and analysis.

ADDITIONAL COURSES

Computer Science: Topics in Computational Ring Theory and Algebras
Foundations of Parallel Computing

Mathematics: Real Analysis
Complex Analysis
Basic Algebra

COURSES UNDERTAKEN ON COURSERA

Algorithms I
Analysis of Algorithms
Introduction to Mathematical Philosophy

Algorithms II
Introduction to Logic