



Nisarg Shah
Computer Science & Engineering
IIT Bombay

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B.Tech
Male
DOB: 25-12-1989

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2011	9.91
Intermediate/+2	GSEB Board	Sheth C. N. Vidyalaya	2007	92.80
Matriculation	GSEB Board	Sheth C. N. Vidyalaya	2005	91.57

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AREAS OF INTEREST

- Algorithms and Discrete Mathematics
- Automata Theory and Theory of Computation
- Formal Methods and Verification

ACADEMIC ACHIEVEMENTS

- SPI of **10.0** (on a scale of 10.0) for 4 semesters
- Currently ranked **First** in the whole institute among all departments and awarded IIT-B institute prize for two years.
- Secured a grade of **AP** (awarded for excellent performance) in three courses.
- Ranked **7th** in **ACM-ICPC Amritapuri Region Onsite Contest**.
- **IIT-JEE 2007 AIR: 34** and awarded scholarship for the same.
- **AIEEE 2007 AIR: 76** (State rank: 2) and awarded scholarship for the same.
- Selected for and attended **NBHM Nurture Camp for Mathematics** for the period 2008-11 and awarded scholarship for the same.
- **INMO Awardee 2007**, selected for and attended International Mathematics Olympiad Training Camp (IMOTC 2007) conducted by NBHM (National Board of Higher Mathematics)
- Selected for in **INPhO** (Physics Olympiad) and **INChO** (Chemistry Olympiad) 2007.
- **7th** in HSC Exam, **1st** in Gujarat Common Entrance Test (GUJCET) with 100% marks and **1st** in the Merit List.

RELEVANT COURSES UNDERTAKEN

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| <ul style="list-style-type: none"> • Design & Analysis of Algorithms • Automata Theory & Logic • Database & Information Systems* (TL) • Computer Architecture* (TL) • Logic Design (TL) • Discrete Structures • Data Structures and Algorithms (TL) • Computer Programming and Utilization (TL) • Abstractions and Paradigms for Programming (TL) | <ul style="list-style-type: none"> • Artificial Intelligence* (TL) • Operating Systems* (TL) • Computer Networks* (TL) • Implementation of Programming Languages* (TL) • Numerical Analysis • Software Systems Lab • Mathematics I: Calculus • Mathematics II: Linear Algebra and Differential Equations • Management(Minor) : Operations Management, Finance & Accounting, Marketing Management* |
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* Indicates undergoing courses (courses to be completed by April 2010)

TL – Theory + Lab

RESEARCH EXPERIENCE

- **Classification of d-simplices and their transitions** Summer Internship '09
Guide: Prof. Frederic Cazals (Research Director) INRIA Sophia-Antipolis
Proved the classification of d-simplices based on the topological change of minimum distance function from vertices for d=2,3 and characterized all feasible transitions between various classes for general d.
- **Approximating union of balls using medial axis** Summer Internship '09
Guide: Prof. Frederic Cazals (Research Director) INRIA Sophia-Antipolis
Proposed a greedy algorithm for approximating a union of balls using fewer balls centered on the medial axis. Also proved the worst case bound for the result of the algorithm.
- **Non-zero cycles in group-labeled graph** Ongoing
Guide: Prof. Ajit A. Diwan IIT Bombay
Given an undirected graph, we discovered and proved the characterization of the weightings (assigning integer weights to its vertices and edges) which contain no non-zero cycles modulo a given positive integer n. We also found the dimension of the vector space formed by such weightings.
- **Functional Heap Reference Analysis** Ongoing
Guide: Prof. U. Khedkar, Prof. A. Sanyal IIT Bombay
Current garbage collector leave a lot of garbage uncollected because they approximate liveness by reachability from program variables. We aim to find at each program point the references to objects that are guaranteed not to be used in the future and make such references null in a subsequent pass so as to allow a more efficient garbage collection.

PROJECTS UNDERTAKEN

- **Image Processing: Feature Extraction** Course Project '08
Guide: Prof. G. Sivakumar IIT Bombay
Developed a project for detecting features such as edges, lines, circles and corners from an input image and an easy-to-use GUI for the same implemented using JAVA Swing Applet as a project for Data Structure and Algorithms Course.
- **Invaders** Course Project '07
Guide: Prof. S. Sudarshan IIT Bombay
Developed a strategy based singleplayer/multiplayer game with efficient and effective AI heuristics in C++ as a project for Programming and Utilization Course.

EXTRA-CURRICULAR ACTIVITIES

- Developed the website www.jeevdaya.net for the Jeevdaya Group
- Participated in organizing the cultural festival **Mood Indigo** in December 2007.
- Participated in organizing the technical festival **Techfest** in January 2009.
- Swam **4 kms in 2.5 hrs** in swimming competition **Swimmathon 2008**
- Stood among first **18** in **Science Quiz** at **Physical Research Laboratory (PRL)** Ahmedabad in 2005

DECLARATION

I, **Nisarg Shah**, hereby declare that the particulars given above are to the best of my knowledge.