

Ratnik Gandhi

CONTACT INFORMATION

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EDUCATION

- *Ph.D-* Information and Communication Technology
Dhirubhai Ambani Institute of Information and Communication Technology,
Gandhinagar, Gujarat, India.
Grade: 3.17/4.0
August, 2005 - August, 2010.(Expected)
- *Master of Technology-* Information and Communication Technology
Dhirubhai Ambani Institute of Information and Communication Technology,
Gandhinagar, Gujarat, India.
Grade: 3.28/4.0
May, 2005.
- *Bachelor of Engineering-* Computer Engineering
Dharmsinh Desai Institute of Technology,
Nadiad, Gujarat, India.
Grade: 69.0%
May, 2002.

AREAS OF INTEREST

Algebra, Game Theory, Algorithms.

RESEARCH ACTIVITIES

- *Ph. D Project*
Thesis Area: Computing Nash Equilibria through Polynomial Algebra
Computation of various solution concepts in games theory is an active area of research. We consider the problem of computing all Nash equilibria of finite normal form games. Nash equilibria of a game are characterized as solutions to a system of polynomial equations. With the polynomial algebra, we investigate the problem and propose alternate methods for computing Nash equilibria.
Advisor: Prof. Samaresh Chatterji
Articles:
Gandhi, R, Chatterji S. *Some Algebraic Properties of a Subclass of Finite Normal Form Games*. CoRR abs/1001.4887: (2010).

Gandhi, R, Chatterji S. *An Algebraic Approach for Computing Equilibria of a Subclass of Finite Normal Form Games*. (2010).
<http://sites.google.com/site/ratnikg/AACNSFNGSChatterjiRGandhi.pdf>.
- *MTech Project*
Internet like network-models are created, maintained, and managed by autonomous agents. We investigate problems of routing and network creation for such networks. Our works establish bounds on Price of Anarchy caused by the selfish behaviour of agents – participating in selfish routing and network creation games. We suggest a polynomial time algorithm to verify the Nash equilibrium state of a game.
Advisors: Dr. Akash Nanavati and Prof. Samaresh Chatterji
Thesis: Gandhi, R. *Selfish Routing and Network Creation Games*. Masters thesis. (2005).
<http://sites.google.com/site/ratnikg/MTechThesisRGandhi.pdf>.

- *Research Trainee*
Institute for Plasma Research, Gandhinagar, Gujarat, India.
Project Title: Solving Various Applications Using Genetic Algorithm.
Emphasis of the project was to show use of Genetic algorithm for various applications. We worked on seven different problems namely, Solving Partial Differential Equation, Function Optimization, Brachistochrone, problem solving by Runge Kutta-4 method, 0-1 Knap Sack, String Matching and Traveling Sales Person's problem. We characterized these problems by fitness functions and chromosomes and suggested solutions by Genetic Algorithms.
Languages: C++ and Java.
Advisor: Dr. Dilip Ahalpara
Duration: December, 2001 - April, 2002.

Papers:

Gandhi, R., Bhensdadia, C. K. *Genetic Algorithm solutions for some Complex Problems*. National Seminar on Algorithms and Artificial Systems February-2003, University of Madras, Chennai, India.

Gandhi, R. *Cooling Parameter Optimizer: Genetic Algorithm Approach*. ICE National Conference, December-2003, NIT, Trichy, India.

Gandhi, R. *Implementation of PDE solver and Function Optimizer using Genetic Algorithms*. SPCTS - A National level Symposium by IEEE Gujarat, October-2003, Ahmedabad, India

COURSE WORK Introduction to Modern Algebra, Cryptography, Information Theory and Coding, Galois Theory, Elliptic Curves, Real Analysis, Topology and Measure Theory, Graph Theory.

TEACHING ACTIVITIES Dhirubhai Ambani Institute of Information and Communication Technology, Gandhinagar, Guajrat, India.

- *Course Instructor*
May, 2010 -
Algebraic Structures (BTech ICT).
- *Course Instructor*
August, 2009 - December, 2009.
Introduction to Object Oriented Programming using Java (MDes Multimedia).
- *Course Instructor*
August, 2005 - December, 2005.
Introduction to ICT and Computational Skills (MSc IT in Agriculture).
- *Teaching Assistant*
August, 2003 - Present
Conducting tutorials and laboratory for following courses:
Introduction to Graph Theory (BTech IT), January 2010 -May 2010
Algorithms and Data Structures (MSc IT), January 2009 -May 2009
Essential Mathematics (MTech ICT), July - Dec, 2008.
Algebraic Structures (BTech ICT), January - May, 2008.
Discrete Mathematics (MSc IT), August - December, 2007.
Introduction to Modern Algebra (BTech ICT), January - May, 2007.
Linear Algebra (BTech ICT), January - May, 2005 & 2006.
Algorithms (BTech ICT), August - December, 2006.
Computer System Organization (BTech ICT), August - December, 2003 & 2004.
Object Oriented Programming (MSc IT), January - May, 2004.

Charotar Institute of Technology, Changa, Gujarat, India.

- *Lecturer*

July, 2002 - June, 2003.

Courses offered: Fundamentals of Compiler Construction, Operating System and Theory of Automata and Formal Languages(BE Computer Science and Information Technology).

Other activities: I was also affiliated with project WinCell to establish a campus wide network on Windows 2000 directory structure.

COMPUTER
SKILLS

- Languages: C, C++, Java, Assembly 8085 & 8086, UNIX shell scripts, L^AT_EX.
- Environments: Linux, Windows NT, Windows 2000 Server, MS DOS.
- Tools: Mathematica, Maple, Gambit.

REFERENCES

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Software Engineer,
Google Inc.,
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Mountain View,
CA 94043,
USA.

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