

# RESUME

## SOHAM DAS

Currently pursuing M.Tech(2010-2012) in Computer Science & Engineering,  
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### ACADEMIC DETAILS:

YEAR	Degree/Exam	Institute	GPA/Marks
2012	M.Tech(CSE)	Indian Institute of Technology Delhi	8.24/10(till 3 <sup>rd</sup> sem)
2010	B.Tech(CSE)	Institute of Engineering & Management, West Bengal University of Technology	9.04/10
2006	Higher Secondary	South Point High School (WBBSE)	84.9%
2004	Secondary	South Point High School (WBBSE)	91.3%

### AREAS OF INTEREST:

Modeling & Analysis of Social Networks, Network Algorithms, Wireless Networks and Data Mining

### COURSES DONE:

**M.Tech:** Information Retrieval, Database Implementation, Special Topics in Algorithms (Cryptography), Wireless Networks, Fault Tolerant Systems, Digital Image Analysis, Logic & Functional Programming

**B.Tech:** Data Structures, Design & Analysis of Algorithms, Formal Languages & Automata Theory, Computer Networks, Database Management Systems, Artificial Intelligence, Operating Systems, Computer Organization, Computer Architecture, Compilers

### M.TECH THESIS (2011- ):

**Title:** Modeling and Analysis of Topic Diffusion in Social Networks.

**Supervisor:** Dr. Amitabha Bagchi, IIT Delhi

**Description:** This work is primarily concerned with modeling *dynamics of topics spreading in a social network* and analyzing the *virality* of topics. We propose a theoretical model to simulate social network dynamics with a continuous stream of exogenous topics competing to enter into and diffuse through the network. The model is being tested on a synthetic social network graph that follows the *Watts & Strogatz (Small World) Graph* Model. We apply *Mean Field Theory* concepts for analyzing the dynamics of the process. Besides theoretical modeling, this project involves extensive coding and simulation studies. We used C and Python for coding. We also developed a parallel code using MPI library to make the simulations faster. We study several metrics of topic diffusion like the *lifetime, spread of topics, cluster formation & merging* and *graph modularity* to analyze *virality* of topics. The interesting fact revealed by our study is that *virality* of topics in this model is achieved as a consequence of the network dynamics, we call *lattice cluster merging*.

### B.TECH Project (2009-2010):

**Title:** Augmenting & Compressing the *Farey Table* and its Applications to Digital Image Processing

**Supervisor:** Dr. Partha Bhowmik, IIT Kharagpur

I did my final year B.Tech project on the problem of augmenting & compressing the *Farey Table* to be used in digital image processing applications. Our study shows that the ranks of fractions in the Farey sequence can be used to provide a useful estimation of their relative values. We designed a novel algorithm to efficiently find the fraction in a Farey sequence  $F_n$  closest to a given fraction  $p/q$ . We could avoid all floating point operations which made this even more elegant and faster. It finds excellent applications in polygonal approximation and shape analysis.

**PUBLICATIONS:**

Soham Das, Kishalay Halder, Sanjoy Pratihar, and Partha Bhowmick, **Properties of Farey Sequence and their Applications to Digital Image Processing**, *Fourth International Conference on Information Processing (ICIP)*, Bangalore, 2010, Proceedings ISBN Number : 978-93-80578-46-0. page number: 71-81.

**AWARDS & HONOURS:**

- **Best Paper Award** at ICIP 2010: Won the best paper award for the paper **Properties of Farey Sequence and their Applications to Digital Image Processing**, Fourth International Conference on Information Processing, Bangalore, 2010.
- **HRD Scholarship: Received post-graduation scholarship based on GATE rank.**

**TECHNICAL SKILLS:**

**Programming Languages:** C, C++, Python (Networkx library), Parallel Programming (MPI library), Graph Visualizations (Graphviz library).

**Softwares:** Matlab, gnuplot, Latex, SocnetV, Pajek.

**OTHER PROJECTS:**

- **Human Activity Detection using SunSPOTS**
- **SQL Injection Attacks and Preventive Measures**
- **Online Multiplayer Ping-Pong Game using C and OpenGL**
- **Painterly Rendering of Real Images using Image Processing Techniques**
- **Face Recognition using PCA**
- **Web based Online Location and Travel Facilitation Service as an Android application**
- **Software to allocate Seats for students in an Examination Center**

**INDUSTRIAL TRAINING:**

**Title:** Client Query Registry

**Description:** Worked with the Oracle Web Support team in TCS, Kolkata. Developed a repository of client information, their queries and the solutions using Oracle Databases.

**POSITION OF RESPONSIBILITY HELD:**

Served as a Teaching Assistant [Jan 2012 to Present] under Prof. Vinay Ribeiro for Wireless Networks (CSL 838).

Served as a Teaching Assistant [July 2011 to Dec 2011] for under-graduate course Introduction to Computers & Programming (CSL 101).

**EXTRA CURRICULAR ACTIVITIES:**

**Social Work:** Have worked with social organization WE CARE, which provides primary education to street children in Kolkata.

**Movie Making:** Won the 2nd prize in a short-movie making competition with the movie named "if I could fly".

**Other Interests:** Travel, Music, Photography, Playing Cricket.