PINTU KUMAR

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ACADEMIC DETAILS

Year	Degree/Exam	Institute	Performance
2009	B.Tech.	IIT BOMBAY	7.03/10 (CGPA after 5 sems)
2007	AISSCE	Central Board of Secondary Education (CBSE)	89.8%
2005	AISSE	Central Board of Secondary Education (CBSE)	94.6%

SCHOLASTIC ACHIEVEMENTS

- Secured **All India Rank 635** in IIT Joint Entrance Exam (2009) amongst 320,000 aspirants
- Secured **All India Rank 1024 (State Rank 25)** in All India Engineering Entrance Examination (2006) among 450,000 aspirants
- Secured **All India Rank 24 in** National Science Talent Search Examination (2003)
- Secured **All India Rank 99 in** National Science Olympiad (2003)
- Selected in top 250 amongst 42,000 aspirants in Indian National Physics Olympiad 2007
- Selected in top 250 amongst 40,000 aspirants in Indian National Chemistry Olympiad 2007

RESEARCH - EXPERIENCE

Summer Internship:

Security attacks on LFSR based Encryption Scheme Kolkata, India
Prof. Bimal Roy, Indian Statistical Institute, Kolkata May 09-July 09

- Studied different variants of LFSR based encryption scheme and their weakness
- Performed literature survey on different kinds of attacks on these cryptosystem such as correlation attack, power attacks, linear differential attack etc.
- Implemented Correlation Attack on LFSR based encryption scheme using known/unknown plaintext

PROJECTS UNDERTAKEN

Traffic Updates & Analysis System **(**Aug 09 – Nov 09)
(*Guide: Prof. S Sudarshan)*

- Built a system for providing real time traffic updates using cumulative data received from GPS device of various users. Regions and time at which updates are desired could be marked by users
- Used Google Maps API to mark the dense traffic regions and current location of the user
- Implemented additional features like manual updates and alternatives options for different regions by users. Users could also subscribe to regions for receiving such messages

Modelling and Animation (Aug 09 – Nov 09)

(**Guide : Prof. Parag Chaudhuri)**

This project was done in stages:

- Drawing a Bezier Curve by allowing the user to define appropriate points for making of a control polygon for the Bezier curve and rendering the actual Bezier curve in real time
- Modelling the lamp using appropriate Bezier Curve for the generation of lamp head and joining them by quadrilaterals. Wooden texture was used for modelling the table
- Animating the Lamp by interpolation between key-frames defined by posing the lamp at various positions and rendering these interpolations in real time

Image Steganography and Encryption (Sep 08- Nov 08)

(*Guide: Prof. G. Sivakumar*)

- Built a steganograph for hiding message in an image and retrieving it after authentication
- Included encryption of the message before its hiding using simple xor encryption
- Analysed susceptibility of the encrypting and steganography algorithm against different brute force and known/chosen plain attack

EZCarrom Game (Sept 07-Nov 07)

(*Guide: Prof. S. Sudarshan*)

- Simulated a game of Carrom implementing all the modern rules including features like increasing/decreasing power and friction on board
- Used innovative logic and appropriate data structure to solve multiple collisions of coins
- Designed user friendly graphical interface for the game using EZWindow

Ray Tracer **(**Aug 09 – Oct 09)

(*Guide: Prof. Parag Chaudhuri*)

- Simulated a ray-object intersection with objects like spheres, cylinder, cones, triangles etc.
- Implemented Phong Shading Model and super sampling for anti-aliasing on these objects and rendered the image to a file in PPM format
- Implemented a simulator which on clicking on any pixel(i,j) of the review image traces the primary and the secondary ray emanating from eye for this pixel to a specified depth

COMPUTER SKILLS

- **Programming Languages**: C/C++, Java, MIT-Scheme, VHDL, Visual Basics, Bash/Perl Scripting
- **Operating Systems**: Windows, GNU/Linux
- **Tools & Applications**: JavaScript, PHP, SQL, HTML, Netbeans, Emacs, Eclipse, Scilab, Matlab

COURSES UNDERTAKEN (By Summer 2010)

- Theory of Computation
- Operating Systems
- Databases
- Differential Equations
- Discrete Structures
- Principles of Programming Languages
- Data Structures and Algorithms
- Algorithms Design and Analysis
- Artificial Intelligence
- Formal Methods in Computer Science
- Language Processors / Compilers
- Computer Networks
- Network Security and Cryptography
- Computer Graphics
- Abstractions and Paradigms in Programming
- Computer Organization and Design

POSITIONS OF RESPONSIBILTY

Sports Secretary (Hostel 8) (Jul 08 – Jul 09)

- Increased participation of the hostel inmates in different sports activities by more than 100%
- Led the hostel to 3rd place in the over-all General Championship

Coordinator, Media and Marketing– ECell (Jul 08-Jan 09)

- Contacted various media groups and made deals with groups like Hindustan Times for E-Summit-09
- Introduced the concept of Round the Year Association with different media for better publicity

EXTRA CURRICULAR ACTIVITIES

- Designed a **Crane Machine** for TechFest-08 for lifting blocks from ground and placing them on specified platform. Completed the task in less than 1.5 minutes becoming the **fastest team from IIT Bombay**
- Awarded **Special Mention for Organisational Excellence** in the field of Sports
- Active member of the **National Service Scheme**; undertook many activities like teaching poor children, visiting slums and organising personality development camps
- Part of the Hostel Dance Team which took part in inter hostel competition (Gyrations)