Rohit Kumar Jha

Junior Undergraduate
Department of Computer Science and Engineering
Indian Institute of Technology, Kanpur

http://home.iitk.ac.in/~rkjha
Email: rkjha.iitk@gmail.com
Phone No.: +91-8005451623

Education

Year	Degree/Certificate	Institute	CGPA/Percentage
2015 (expected)	B.Tech.	Indian Institute of Technology, Kanpur	9.6/10 (4 semesters)
2011	AISSCE, XII (CBSE)	Delhi Public School, Bokaro Steel City	92.2%
2009	AISSE, X (CBSE)	Rose Public School, Darbhanga	96.2%

Areas of Interest

- **Algorithms**
- **Machine Learning**
- **Natural Language Processing**

Scholastic Achievements

- Awarded **Gold Medal** for being **Regional Topper** in **Regional Mathematical Olympiad (RMO)** 2010 organised by *Homi Bhabha Centre for Science Education*
- Secured **All India Rank(AIR) 122** in **IIT-JEE 2011** out of around **0.5 million students**
- Secured **All India Rank(AIR) 82** in **AIEEE 2011** out of around **1.1 million students**
- Received **Academic Excellence Award** that is awarded to **top 7% students** in Academic Year 2011-12
- Recipient of **Summer Undergraduate Research Grant for Excellence (SURGE) 2013**, granted by *Dean Resource Planning and Generation*, IIT Kanpur
- Secured **International Rank - 39** in **4th International Mathematics Olympiad** organised by *Science Olympiad Foundation(SOF)*
- Secured **All India Rank(AIR) - 47** in **11th National Science Olympiad(NSO)** organised by *Science Olympiad Foundation(SOF)*
- Secured **All India Rank(AIR) - 12** in **National Science Talent Search Examination(NSTSE) 2011**

Major Projects

Implementation of Integer Multiplication *Summers '13*

Research Project under SURGE program under the mentorship of Prof. Piyush P. Kurur

- Implemented **Integer Multiplication Algorithms based on Fast Fourier Transformation** especially for 1000 to 10000 bit multiplications due to wide application of 1024, 2048 and 4096 bit multiplications in Cryptanalysis
- Achieved around **two times faster running time than the existing GMP Implementation**
- Planning to get it included in GMP Library

Study of Graph Algorithms *January '13 till now*

Research Project under Prof. Surender Baswana

- Designed some **promising ideas** for **Decremental Maintenance of DFS Tree in Directed Acyclic Graphs** and currently working on them
- Surveyed the existing literature on **Incremental Maintenance of All Pairs Reachability in Directed Acyclic Graphs**
- Studied efficient algorithms for **Incremental Maintenance of Topological Ordering in Directed Acyclic Graphs** and **Incremental Maintenance of DFS Tree in Directed and Undirected Graphs**

VANI - Institute Wiki for IIT Kanpur *May '12 to October '12*

Supported by Dean, Resource Planning and Generation and Student's Gymkhana, IIT Kanpur

- Worked in a team of around 10 to develop an **open-to-edit wiki built using Drupal CMS** for IIT Kanpur residents where all archival and other important campus information will be available to them
- Extended to other features like **Student and Faculty Search**, **Lost and Found Portal**
- Included a **Forum for discussion** with each person getting a platform to opine his/her views by means of a minimalistic profile

Hit Me - 3D Game Integrating Windows Phone with Microsoft Kinect *March '13 to Apr '13*

Independent Project

- Created a 3D game, similar to Temple Run, which more than one player can play
- **Integrated Windows Phone and Microsoft Kinect** for a better gaming experience, allowing anyone with a Windows Phone to connect to the game in real time and create obstacles
- Won **first position in Softkriti, Techkriti '13**

- Among **top 7 teams in Code.Fun.Do organised by Microsoft** and advanced to the **National Round**

8-bit General Purpose Computer *March '13 to April '13*

CS220 Course Project under the guidance of Prof. Subhajit Roy

- Implemented a **8-bit General Purpose Computer on FPGA board** having **load-store architecture** using Verilog HDL
- Implemented **Recursive function calls** and the General Purpose Computer could run programs such as finding factorial of any given number n, finding the sum upto n numbers, finding the nth Fibonacci number and display blinking LED
- Implemented an **Interpreted and Compiler** for the programs to be run on this General Purpose Computer
- Chosen as **one of the best projects** in the course

eC - Higher Level Language for C Language *May '12 to June '12*

Under Programming Club, IIT Kanpur

- Designed a much **easy-to-code-in language**, along with its interpreter, to produce its equivalent C code
- Provides a **huge relaxation in terms of syntax** and provides **functions for most common tasks**
- **Takes care of the common syntax errors** that tend to creep in

Cloud Pad *Summers '12*

Under Electronics Club, IIT Kanpur

- Developed a **GUI for PandaBoard** containing a game, bluetooth application and a music and video player
- Game contains a **Multiplayer LAN Game and a Cloud-based Game** for PandaBoard
- Bluetooth Application allows **Realtime Maintenance and Access of Information on PandaBoard** using Bluetooth with Information residing at Remote Server

Hexapod *Summers '12*

Under Robotics Club, IIT Kanpur

- Built a six-legged desktop sized Hexapod, with three degrees of freedom in each leg and independent control over each leg
- Excellent design and walking mechanism renders stability in spite of reasonable weight
- Can perform all kinds of rotation with great precisions, and can walk in all directions

Table Tennis Game *April '13*

CS252 Course Project under the guidance of Prof. Arnab Bhattacharya

- Created a 2D Table Tennis Game in Python, both for two player and with an AI, containing sound effects and other features using PyGame module

Snake Game *November '11*

ESC101 Course Project under the guidance of Prof. Piyush P. Kurur

- Created a Snake Game in Python with some innovative and interesting features using PyGame module
- Got **A* in the course based on the project work** and for being in top 1% in the course

Relevant Courses (*Ongoing)

Fundamentals of Computing
Mathematics I (Basic Calculus)
Mathematics II (Linear Algebra)
Data Structures and Algorithms
Computer Organization
Mathematics for Computer Science I
Mathematics for Computer Science II
Mathematics for Computer Science III
Computing Lab I
Computing Lab II
Probability and Statistics
Introduction to Logic
*Randomized Algorithms
*Natural Language Processing
*Operating Systems
*Theory of Computation
*Modern Cryptology

Computer Skills

Languages (Proficient in): C, C++, Python
Languages (Familiar with): C#, Java, Javascript, PHP,
Other Tools/Languages: LaTeX, HTML, CSS, Octave, Unity 3D, Bash Shell Scripting, Drupal(CMS), Git, MIPS Assembly Language, Verilog
Platforms: Windows, Linux, Windows Phone, Android

Other Achievements

- Won **AI Challenge** organized by **HackerRank** for IIT Kanpur Students
- Achieved **1st Position** in **FPGA Contest** at **Techkriti**, *the Annual Tech Festival of IIT Kanpur*
- Achieved **1st Position** in **Softkriti**, the *Software Innovation Challenge*, at **Techkriti**, the *Annual Tech Festival of IIT Kanpur*
- Advanced to Second Round, **the National Round**, of **Code.Fun.Do 2013** organised by **Microsoft**
- Received **Hacker's Choice Award** in **Yahoo HackU 2012**