

# DHEERAJ KUMAR SINGH

D-101, PATEL Hall of Residence  
IIT Kharagpur, Kharagpur - 721 302  
West Bengal (India)

Date of birth: 26<sup>th</sup> December 1989  
Mobile: +91 9800131665  
Email : [dheeraj1126@gmail.com](mailto:dheeraj1126@gmail.com)

## ACADEMIC QUALIFICATION

Degree/Certificate	Institution/Board	Year	CGPA/%
B.Tech (Hons.) in Computer Science & Engineering	IIT Kharagpur	July 2007 – May 2011(Projected)	9.46/10
Indian School Certificate Examination (XII)	Little Flower School, Jamshedpur	2007	96.5%
Certificate of Secondary Education (X)	Little Flower School, Jamshedpur	2005	94.0%

## ACADEMIC ACHIEVEMENTS

Competitive Examinations	<ul style="list-style-type: none"><li>All India Rank 74 in IIT-JEE 2007 among 0.25 million students and a state rank of 2 in Jharkhand</li><li>All India Rank of 84 in West Bengal JEE 2007</li><li>All India Rank of 536 in AIEEE 2007 among 0.4 million students and a state rank on 12 in Jharkhand</li></ul>
Scholastic Achievements	<ul style="list-style-type: none"><li>Institute Rank of 9 among 799 4<sup>th</sup> Year students</li><li>Department Rank of 4 among Computer Science and Engineering B.Tech students</li><li>Perfect SGPA of 10/10 in the previous(6<sup>th</sup>) semester</li><li>Awarded Jagadis Bose National Science Talent Search Scholarship (JBNSTS) (2007-2011) – Selected for being among the top 15 students from all over India after 3 stages of examination</li><li>Awarded Goralal Syangal Scholarship (2007- 2011) for being the top ranker (JEE) in the Computer Science Department</li><li>Awarded Golden Jubilee Scholarship by TATA Motors in 2008, 2009 and 2010 for being among the best performers from Jamshedpur in Engineering</li><li>Awarded MITACS GLOBALINK Scholarship in 2010 (selected from 600 applicants from different IITs) for working on a research project in any University in Canada: Scholarship was worth \$8500</li><li>Nominated for OPJEMS Scholarship in 2007, 2008, 2009 and 2010 for consistently being among the top rankers in the institute</li><li>Secured a perfect score of 100% in Mathematics in Indian School Certificate Examination (XII) in 2007</li></ul>

## EXTRA CURRICULAR ACTIVITIES

- Among top 5 teams of Overnite (ACM affiliated programming event) in 2010, the event saw participation from all over India as well as neighboring countries
  - Had qualified for the final round of this event in the previous two years in 2008 and 2009
- Won the second prize in simulation league in RoboCup Challenge @ India 2009
  - Wrote an algorithm and implemented it for bots playing football, the code won all but one of its matches
- Won the Best Algorithm Award in 8mile, an event on Computer Vision and Artificial Intelligence, Kshitij-09
  - Part of a team of 3 that coded a bot for autonomous road navigation
  - The event saw participation from all over India
- Won in Nightshift, an on the spot Robotics event, Kshitij-09
- Won in Maths Olympiad, Kshitij-08
- Represented Patel Hall of Residence in inter-hall events: Product Design, Open Soft, Case Study and Maths Olympiad
  - Part of bronze winning Case Study team in 2009
- Active member of KRAIG - Kharagpur Robotics and Artificial Intelligence Group
- Knowledge of Languages: C, Java, C++, LISP, F#, C#, Visual Basic, Perl, Prolog, x86 Assembly Language, Verilog, Matlab, LaTeX, HTML, JavaScript

## WORK EXPERIENCE

Research Assistant	Software Practices Lab, University of British Columbia, Vancouver (May 2010 – July 2010)
Responsibility	<ul style="list-style-type: none"><li>Finding and implementing new language constructs in Java which make the code more readable</li><li>The unique feature of this is that these constructs are fluid in nature and are visible only till the programmer wants</li></ul>

<b>Result</b>	<ul style="list-style-type: none"> <li>Implementation was done using an <b>Eclipse plug-in</b> that is available as an <b>open source project</b></li> <li>Mentor: <a href="#">Prof. Gregor Kiczales</a>, Software Practices Lab, Department of Computer Science, University of British Columbia</li> </ul>
<b>Research Intern</b>	<b>Microsoft Research India (May 2009 – July 2009 and December 2009)</b>
<b>Responsibility</b>	<ul style="list-style-type: none"> <li>Using statistical methods to derive rules of usage for a concurrent API</li> <li><b>Automatically learn the rules</b> of usage of a library thus also being able to <b>find errors</b> in its usage</li> <li><b>As a result of my good work I was given the opportunity to continue with my work there during the winter vacation</b></li> </ul>
<b>Result</b>	<ul style="list-style-type: none"> <li>We were able to make a <b>running software</b> with good results by the end of my internship</li> <li>Worked during winters on the empirical evaluation of the algorithms and using heuristics to improve both its efficiency and quality of results</li> <li>Mentors: <a href="#">Ganesan Ramalingam</a>, Senior Researcher, Microsoft Research India <a href="#">Venkatesh-Prasad Ranganath</a>, Researcher, Microsoft Research India</li> </ul>
<b>Short Term Teacher for Physics</b>	<b>Prerna Classes, Jamshedpur (May 2008 – July 2008)</b>
<b>Responsibility</b>	<ul style="list-style-type: none"> <li>Teaching Physics to <b>800 IIT JEE aspirants</b> at Prerna Classes, Jamshedpur</li> <li>Most challenging part of the job was to be ready to face questions from the students and presenting a solution on board</li> <li>I was rated excellent by the students leading to a salary bonus</li> </ul>

## SELECT PROJECTS AND PAPERS

<b>B. Tech Project</b> (August 2010 – Date)	<ul style="list-style-type: none"> <li>We are looking at regression test case selection and prioritization taking into account the state chart diagram</li> <li>The method will look at finding inconsistency between state chart diagram and program code</li> </ul>
<b>RoboCup</b> (February 2009 – August 2009)	<ul style="list-style-type: none"> <li>Project taken up by <b>KRAIG</b> for RoboCup Challenge@India, 2009</li> <li>My work included coming up with algorithms for the players to play soccer and implementing the same in Java</li> <li>Our code won the second prize in simulation league at Robocup Challenge@India, 2009</li> <li><a href="#">A link to the paper submitted at Robocup Challenge Presentation Conference</a></li> </ul>
<b>Simulation of objects in a lighted room</b> (February 2009 – April 2009)	<ul style="list-style-type: none"> <li>Wrote methods to <b>represent a room with multiple objects</b> placed on its floor under the influence of <b>multiple light sources</b></li> <li>Implemented the same in Java <b>without</b> the use of Java3D</li> <li>The program used a mixture of ray tracing and z-buffer algorithms with subtle changes to achieve its goal</li> <li><a href="#">A link to the report of the project</a></li> </ul>
<b>Random Orthogonal Polygons</b> (September 2008 – November 2008)	<ul style="list-style-type: none"> <li>Designed an algorithm which was a slight variation of the INFLATE-CUT algorithm to generate random orthogonal polygons</li> <li><b>Modified the INFLATE-CUT algorithm to remove the restriction</b> that edges could not be collinear</li> <li>Given a polygon the algorithm would also find the <b>best fit polygon</b> from a given set</li> <li>Implemented the same in C and used Java to display the results (<a href="#">A link to the report of the project</a>)</li> </ul>

## POSITIONS OF RESPONSIBILITY

- Attaché for Maths Olympiad, Patel Hall of Residence (2009 - 2010)**
  - Responsible for preparing the team for the inter-hall Maths Olympiad event which is part of the Technology General Championship
  - Was able to significantly improve the performance of the team – the team scored 70% in 2010 as compared to 30% the previous year
- Captain for Open Soft and Maths Olympiad, Patel Hall of Residence (2010 - 2011)**
  - Unanimously selected by the hall members because of my good performance as an **Attaché** and my contribution to these teams in the past
  - Responsible for participation of the hall in these events of Technology Championship this year
- Undergraduate Representative, Academic Advisory Committee, Department of Computer Science and Engineering (2009-2011)**
  - Responsible for communicating to the faculty any course related or resources related problems faced by us
  - Brought to the notice of the department **various problems with the department servers** and their backup which caused problems to the students, the **matter was then resolved**