

# Vaibhav Agarwal

Computer Science and Engineering – IIT Kharagpur

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## Educational Qualifications

**Bachelor of Technology** : Indian Institute of Technology Kharagpur - CGPA: **8.6/10.0** July'14-Present  
**Senior Secondary - CBSE** : Mahatma Hansraj Modern School, Jhansi - Overall percentage: **95.4%** 2014  
**Secondary - ICSE** : Christ the King College, Jhansi - Overall percentage: **94%** 2012

## Interests

Algorithms and Graph Theory      Data Analytics      Networks      Artificial Intelligence

## Projects

- **Positioning System using Bipartite Matching and Voronoi Diagrams** May'2016-July'2016  
Indian Institute of Technology Kharagpur, under Prof. Jayanta Mukhopadhyay
  - Created a positioning module for humanoid robots using computational geometry concepts of Voronoi Cells and Delaunay Triangulations.
  - Created a role matching module which uses maximum bipartite matching (Hungarian Algorithm) to allot the generated positions to suitable bots dynamically.
  - Integrated successfully. Increased the time efficiency of the code by 30% of the previous implementation, using constant memory.
  - The team (including me) participated in 3D Simulation League at RoboCup 2016, Germany.
- **Path Planning module for differential drive robots** May'2015-July'2015  
Indian Institute of Technology Kharagpur, under Prof. Jayanta Mukhopadhyay
  - Created a path planner for differential drive soccer playing robots using Dynamic Window Algorithm.
  - Obtained successful results, decreasing the slip parameter to less than 1%.
  - The implementation was successfully integrated and the team won the Bronze medal for IIT Kharagpur at FIRA 2015, South Korea.
- **Data extraction from a 2-D plot** OpenSoft competition, IIT Kharagpur Feb'2016-Mar'2016
  - Created a module to extract graph information from a plot and create the corresponding data table using OpenCV libraries and Tesseract.
  - The implementation was successful in more than 80% of the cases, including dashed lines and discontinued plots. The extraction module was also used to extract out the legend box from the plot.
- **Line follower robot** Robotics workshop at IIT Kharagpur Dec'2014
  - Attended a workshop organised by IEEE and Technology Robotix Society, IIT Kharagpur aimed to create an autonomous line follower robot.
  - Worked on techniques to build the robot and subsequently, coded the algorithm using DFS traversal to cover the entire grid of lines, using Atmel Studio.
- **Back-end development of Online Game** Kharagpur Game Theory Society Jan'16-Mar'16
  - Contributed to the development of an online game for a flagship contest of KGTS, IIT Kharagpur.
  - Created modules in php using CodeIgniter framework.
  - The game witnessed a participation of over 1000 participants from IIT Kharagpur, Delhi University and IIM Rohtak in a 2-day event.
- **Online sales portal** Software Project, Prof. Partha Pratim Das, IIT Kharagpur Mar'2016
  - Created a software in Java which allows users to buy and sell items to different users.
  - The user can perform administrative roles on his profile and history log, as well as interact with other users through messaging.
  - Awarded with an "Exceptional" grade in the project work.

## Achievements and Scholarships

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- All India Rank **217** in Joint Entrance Exam (JEE) Advanced 2014 among 150,000 candidates. 2014
- All India Percentile **99.99** in Joint Entrance Exam (JEE) Mains 2014 among 1.5 million candidates. 2014
- ACM ICPC Asia Amritapuri Regional Finalist. 2015
- Member of Bronze winning team at Federation of International Robosoccer Association 2015, South Korea. 2015
- Represented IIT Kharagpur in RoboCup 2016 held in Leipzig, Germany. 2016
- Kishore Vigyanik Protsahan Yojana (KVPY) Scholar, Dept of Science and Technology, Govt of India. 2013
- National Talent Search (NTSE) Scholarship awardee, by NCERT, Govt of India. 2010
- National top 300 in National Standard Examination in Physics and Chemistry. 2013-14
- Aditya Birla Group Scholarship shortlist, amongst top 32 IIT freshmen. 2014
- Goralal Syngal Scholarship at IIT Kharagpur for outstanding academic achievements. 2014-15

## Work and Volunteer Experience

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- **Algorithmic Game Theory Society, Head** *IIT Kharagpur* Jan'16-Present
  - Organise and deliver classes to freshers and sophomores interested in algorithmic game theory.
  - Provided questions and game design to the parent team of Kharagpur Game Theory Society, for its flagship contests Nashify 2015 and 2016; Both events saw the participation of over 200 participants from IIT Kharagpur.
- **Image Processing Workshop, Mentor** *Organised by IEEE and Texas Instruments* Dec'2015
  - Mentored a batch of more than 50 freshers in the image processing workshop.
  - Taught the freshmen basic image processing algorithms and techniques.
- **Secretary** *Code Club, IIT Kharagpur* July'14-Present
  - Problem setter and tester at CodeNites, the fortnightly programming contest in IIT Kharagpur.
  - Conducted algorithms and data structures class for freshers. Over 100 students attended the 15-day class.
  - Organised Bitwise 2016, which saw the participation of over 1000 participants from across the globe.
- **Case Study Team, Sub Head** *Meghnad Saha Hall, IIT Kharagpur* Jan'16-Present
  - Participated in the inter-hall Case Study competition 2016 and won the First prize.
  - Suggested a present scenario and future directives to tackle the problem statement using SWOT analysis.

## Technical Skills

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Programming Languages	C/C++, Java, Python, C#, PHP, x86 Assembly
Operating Systems	Ubuntu, Microsoft Windows
Utilities	Git, GDB, Shell, $\LaTeX$ , Docker

## Relevant Courses

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Algorithms 1	Algorithms 2 *	Graph Theory *
Software Engineering	Automata Theory	Compilers *
Computer Organization *	Discrete Structures	Data Structures
Switching Circuits and Logic Design	Probability and Statistics	* denotes ongoing courses

## Miscellaneous

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- Got sponsorship to attend RoboCup 2016 Symposium at Leipzig, Germany from IIT Kharagpur.
- Occasional contributor to Open Source and self projects on Github <https://github.com/VaibhavAgarwalVA>.
- Vice Captain of the Maths Olympiad team of MS Hall. Winner of Open IIT Maths Olympiad 2015 and Freshers Maths Olympiad 2014 organised by Technology Students' Gymkhana, IIT Kharagpur.
- Likes to read, listen and innovate.
- Sporadic blogger at my blog <http://iitiantheoryoflife.blogspot.in>.