

# Abhinav Agarwal

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## EDUCATION

- 2014–present **B.Tech in Electrical Engineering**, IIT Kharagpur.  
CGPA - 9.53 (on scale of 10)
- May 2014 **12th Grade**, CBSE, New Delhi.  
Aggregate - 95.4%
- May 2012 **10th Grade**, CBSE, New Delhi.  
GPA - 9.4 (on scale of 10)

## COURSEWORK

### Undergraduate.

- Algorithms (with lab)
- Programming and Data Structures (with lab)
- Artificial Intelligence
- Machine Learning

## EXPERIENCE

### Kharagpur Robosoccer Students' Group

- Feb 2015 **Artificial Intelligence Team Member.**
- present KRSSG is SRIC (IIT Kharagpur) sponsored project (as a part of CFER) with Prof. Jayanta Mukhopadhyay as the principal investigator. KRSSG won bronze in FIRA 2015.

### Robocup3d Simulation League.

KRSSG is first Indian team to qualify for Robocup3d simulation which was held at Germany in July 2016. KRSSG made an outstanding debut by qualifying all rounds and winning all matches against 1 team.

- Implementing CMA-ES based walk and kick optimization
- Implemented basic skill and utilities from scratch
- Deriving full team formation using Delaunay Triangulation
- Implemented Dynamic Role Assignment with active collision avoidance
- Implemented Inter-Bot Communication
- Implemented multi agent passing
- Represented KRSSG in Robocup2016 at **Leipzig, Germany**

### Code-O-Soccer.

Code-O-Soccer is a coding competition conducted by KRSSG.

- Documentation
- Implemented a windows batch script to automate the evaluation process.

## National Digital Library Project

May 2016 **Internship.**

- present NDL is a flagship initiative of MHRD with Prof Sudeshna Sarkar (CSE, IIT Kgp) and Prof P.P. Chakrabarti (CSE, IIT Kgp) as Principal Investigators.
  - o Implemented spell check using aspell linux utility.
  - o Implemented metadata normalization using regex pattern matching.

## Deep Learning Neural Networks Project

Dec 2015 **Research Project.**

- Research Project under Prof. Debdeep Sheet
  - o Implemented denoising and dropout Autoencoder in theano (python)

## Image Processing Winter Workshop

Dec 2014 **Participant.**

- Attended IEEE certified, Computer Vision workshop.
  - o Implemented blob detection, noise reduction, edge detection in OpenCV

## Open Source Contributions

- Dec 2015- **Contributor**, SymEngine | Sympy | C++.
- March 2016 SymEngine is a fast C++ symbolic manipulation library.
  - o Successfully merged 17 pull requests pushing total 56 commits.
  - o Listed as author in symengine.
  - o Author of the talk *SymEngine: A Fast Symbolic Manipulation Library* in Scipy2016 at **Texas (USA)**.

## SKILLS

Language	English, Hindi
Programming Languages	C, C++, Python, Latex, Java
Concepts	OOPS, STL, Multithreading, Data Structures & Algorithms, Regex
Platforms	Windows, Linux
Tools	Git, Bash, Batch scripting, Matlab, Apache Solr, Protobuf, OpenCV, Theano

## ACHIEVEMENTS

- o Department rank 2 (out of 110 students (approx))
- o Qualified for **ACM-ICPC** (2015) Amritapuri regionals.
- o Secured rank in top 0.1% in JEE Mains 2014 (out of 1.3M students (approx))
- o Secured rank in top 0.5% In JEE Advanced 2014 (out of 0.15M students (approx))
- o Achieved Excellent (EX) grade in Programming and Data Structures, Algorithms, Machine Learning, Artificial Intelligence.
- o Represented KRSSG in Robocup2016 at **Leipzig, Germany**. The group made an outstanding debut by winning all matches against 1 team and drew multiple matches against 2 teams.
- o Author of the talk *SymEngine: A Fast Symbolic Manipulation Library* in Scipy2016 at **Texas (USA)**.