

# Ayush Sharma

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## EDUCATION

**IIT GUWAHATI**  
BTech in Mathematics & Computing  
Expected May 2019 | Guwahati, India  
Cum. GPA: 8.52 / 10.0 (Current)

**BHAVAN'S VIDYASHRAM**  
HIGH SCHOOL  
May 2015| Jaipur, India  
Percentage: 91.40% | CBSE

## LINKS

Github:// AShar97  
LinkedIn:// ayushsharma97

## COURSEWORK

**UNDERGRADUATE**  
Monte Carlo Simulation  
Probability Theory & Random Processes  
Financial Engineering + Practicum  
Stochastic Calculus for Finance  
Statistical Analysis of Financial Data \*  
Portfolio Theory & Performance Analysis \*  
Linear Algebra  
Matrix Computations \*  
Discrete Mathematics  
Data Structures & Algorithms + Practicum  
Optimization  
Game Theory & Economics  
Scientific Computing + Practicum  
Operating Systems + Practicum  
Formal Languages & Automata Theory  
Theory of Computation \*  
Databases + Practicum  
Computer Networks + Practicum

**MOOC**  
(taken adjunct to curriculum):  
{Certifications}  
• Machine Learning (Coursera)  
• Deep Learning (Coursera)  
• Advanced Machine Learning (Coursera) \*  
\* To be completed in Autumn 2018

## SKILLS

**PROGRAMMING**  
C/C++ • Python

**STATISTICAL TOOLS**  
R • MATLAB \*

**DBMS**  
MySQL • Cassandra • neo4j

**MISCELLANEOUS**  
L<sup>A</sup>T<sub>E</sub>X • Arduino \* • Microsoft Office

**OPERATING SYSTEMS**  
Windows • Unix (macOS) • Linux  
\*Elementary Proficiency

## RESEARCH

**TWO PLAYER NETWORK CONGESTION GAMES**  
VISITING STUDENTS' RESEARCH PROGRAMME 2018  
TATA INSTITUTE OF FUNDAMENTAL RESEARCH  
May - July 2018 | Prof. Umang Bhaskar

- Investigated from computational viewpoint two-player network congestion games, with focus on the bounds of convergence of the Nash dynamics.
- Developed the algorithms to find Nash equilibria in the particular cases of series-parallel graphs and directed acyclic graphs.

## PROJECTS

**GENERALIZED EXPONENTIAL DISTRIBUTION**  
EXTENDED VERSION | ACADEMIC PROJECT  
April 2017 | Prof. Arabin Dey

- Implemented a random number generator for an extended version of the generalized exponential distribution in both uni-variate and bi-variate cases.
- Technology used: R.

**COLLECTIVE ROBOTICS** | ROBOTICS CLUB, IIT GUWAHATI  
November 2016 - April 2017

- The team implemented a modified version of the Particle Swarm Optimization algorithm, for the collaborative searching mechanism, to achieve rendezvous task by the cumulative effort of multiple autonomous robots, functioning independently sans any communication.
- Technology used: Python and Arduino.

**TOY-LANGUAGE INTERPRETER** | ACADEMIC PROJECT  
April 2017 | Prof. Kalpesh Kapoor

- Implemented an Interpreter for a toy procedural programming language.
- Technology used: Python.

## ACHIEVEMENTS

**MITACS GLOBALINK RESEARCH INTERNSHIP 2018**  
Selected for the Mitacs - 2018 Globalink Research Internship Award.

**TIFR VSRP-2018**  
Selected for the Tata Institute of Fundamental Research - Visiting Students' Research Programme 2018.

**INSTITUTE MERIT SCHOLARSHIP**  
Awarded Institute Merit Scholarship for securing 1<sup>st</sup> position in the U.G. batch of 2019 (strength 50) of Department of Mathematics, in the academic session 2015-2016.

**JOINT ENTRANCE EXAMINATION 2015**  
Secured position in the top 0.3% among 1.35 million candidates in the test, required for admissions to IITs.

**KVPY 2014-15**  
Obtained (qualified for) the National Program for Fellowship in Basic Sciences (for high school students) by securing a position in the top 1% among 50,000 candidates.

**NTSE 2010-11**  
Obtained (qualified for) the National Talent Search Scholarship by securing a position in top 1,000 candidates.

## EXTRACURRICULARS

**INTRA-BATCH SPORTS COMPETITION**  
Secured 3<sup>rd</sup> position in the table-tennis event.

**COMMUNITY SERVICE**  
Tutored high school students, from under-privileged background, in Physical Sciences and Mathematics, on weekends during academic session 2016-17.

**FRESHMEN MENTORSHIP**  
Mentoring freshmen under Peer Mentoring Programme of Students Welfare Board, IIT Guwahati, during academic session 2017-18.