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) Specialization
• Deep Learning (Coursera) Specialization
• Advanced Machine Learning (Coursera) Specialization *

To be completed in Autumn 2018

SKILLS

PROGRAMMING
C/C++ • Python

STATISTICAL TOOLS
R • MATLAB *

DBMS
MySQL • Cassandra • neo4j

MISCELLANEOUS
LaTeX • 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
- 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.
- Future scope: Ameliorate via Reinforcement learning the accuracy and efficacy of the modified Particle Swarm Optimization algorithm.

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 1st 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 3rd 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
Mentored freshmen under Peer Mentoring Programme of Students Welfare Board, IIT Guwahati, during academic session 2017-18.