



# DEEPESH KUMAR LALL

Final Year Undergraduate  
Department of Computer Science and Engineering  
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## EDUCATIONAL QUALIFICATIONS

| Year                         | Degree      | Institution(Board)                            | CGPA/%    |
|------------------------------|-------------|---|-----------|
| July'17 – June'21 (expected) | B.Tech, CSE | Indian Institute of Technology, Kanpur        | 8.7/10.0  |
| 2017                         | CBSE – XII  | Delhi Public School, Bokaro Steel City (CBSE) | 92.6%     |
| 2015                         | CBSE – X    | Delhi Public School, Bokaro Steel City (CBSE) | 10.0/10.0 |

## SCHOLASTIC ACHIEVEMENTS

- Rank 795, JEE Advanced 2017 (amongst 220,000 candidates)
- Rank 3588, JEE Main 2017 (amongst 1.4 million candidates)
- All India Rank 203, KVPY Scholarship SX (Conducted by IISc Bangalore) 2016
- Among the top 1% , in National Standard Examination in Physics (NSEP) conducted by Indian Association of Physics Teachers (IAPT) 2016-17
- Among the top 10%, in National Standard Examination in Astronomy(NSEA) conducted by Indian Association of Physics Teachers (IAPT), and qualified for Indian National Astronomy Olympiad (INAO) 2015-16
- Among the top 10% , in National Standard Examination in Physics(NSEP) conducted by Indian Association of Physics Teachers (IAPT) 2015-16.
- Awardee, Regional Mathematics Olympiad(RMO) 2015.

## RESEARCH EXPERIENCE

### Social Distancing via Social Scheduling: A Game Theoretic Approach

*Co-Author* IIT Kanpur, India August. 2020 - Present

- In proceeding with eighteenth European Conference on Multi-Agent Systems scheduled virtually June 28-29, 2021.
- Generated simulation using ILP for analysis of the developed strongly polynomial algorithm for single demand slot allocation.
- Developed and optimized computationally tractable truthful allocation algorithm for multi-unit slot allocation problem from an NP class of multi-unit combinatorial auction system.
- Compared and optimized the computational complexity for the modelled approximate solution to the optimal allocation.

## PROJECTS

### Java IC generator

*Prof. Swarnendu Biswas* [github.com/DeepeshLall/Compiler-3ACgen](https://github.com/DeepeshLall/Compiler-3ACgen) Jan 2020 - March 2020

- Implemented a Multi-Level Symbol Table with coercion, implicit type castable Intermediate 3AC code(x86) generator for JAVA in a non-JVM env. with ANTLR4 as Computer based Language Recognizer and graphical AST.
- Used the ANTLR4 to parse code Lexically and Syntactically as per the Oracle's specified grammar and using its output to make Graphical format of AST.

### gemOS (C/Assembly)

*Prof. Debadatta Mishra* [github.com/DeepeshLall/CS330-OS](https://github.com/DeepeshLall/CS330-OS) Aug 2019 - Nov 2019

- Implemented and tested various operating system designs and optimizations on gemOS such as Process Context, Paging, Caching, Filesystem and Multithreading.
- Implemented pipes, multilevel page tables with lazy page allocation scheme, cfork, vfork for smart process creation, and parallelized hash tables using Multithreading.

## RELEVANT COURSES

|                                |                                  |                       |                            |
|--------------------------------|----------------------------------|-----------------------|----------------------------|
| Fundamentals of Computing      | Discrete Mathematics             | Computer Organization | Logic for Computer Science |
| Data Structures and Algorithms | Probability for Computer Science | Computing Lab - 1     | Financial Econometrics     |
| Operating System               | Theory of Computation            | Introduction to ML    | Advanced Algorithms        |
| Compiler Design                | Database and Management          | Computer Networks     | Bayesian Econometrics      |
| Parallel Computing             | Game theory & mechanism design   | Advanced Econometrics | Macroeconomics             |

## WORK EXPERIENCE

### ADB-D Cloud Service Performance monitoring

*Oracle* India May 2020 - June 2020

- Used Linux system report of cloud to extract metrics for performance monitoring like server, clusterware, databases etc.
- Made a Synthetic Metric generator for desired distribution of load metrics with different possible Random distribution such as Gaussian, Laplacian and Expovariate etc over the base line along with manual override functionalities for Ideal Generation of metric distribution.
- Predicted the system's performance metric using Time Series Models like ARIMA to generate the forecast of various load-monitored metrics on 20% extrapolated time scale and further classified the state of server for load balancing ADB.
- Optimized the forecast results using auto-ARIMA for accuracy metric's improvement.
- Received a pre-placement offer based on performance.

### Server Benchmark testing

*Supervisor Prof. Debadatta Mishra* IIT Kanpur April 2019 - July 2019

- Used apachejmeter benchmarking tool for server load and oltp benchmarking for database load testing.
- Confirmed the knee point in the graphical result of load on server in terms of latency time and throughput, with variation of number of users.
- Used Blazemeter and Apachejmeter for sending concurrent request from multiple threads recording the output sequence and benchmarked consecutively on a full-stack website hosted over localhost.

## POSITIONS OF RESPONSIBILITY

- **Mentor**, *Association for Computational Activities* : The student body of Department of Computer Science and Engineering, IIT Kanpur.
- **Student Guide**, *Counselling Service* : The student body of IIT Kanpur, guiding the new coming student during their first year.
- **Surveyor**, *National Service Scheme(NSS), IITK* : A platform for conducting survey and education to underprivileged section of society in the villages around IITK.

## SKILLS

**Programming:** C, C++, Python, Haskell, NodeJS  
**App Development:** HTML, CSS, JavaScript, Bootstrap, PHP, React, React-Native  
**Data Analysis:** R, Graphviz, Pandas, Excel,SQL, SQLITE  
**Tools:** Git ,Bash, L<sup>A</sup>T<sub>E</sub>X, MIPS, GDB, Docker, REGEX, ANTLR4, Lex, Yacc, Bison , Autodesk Fusion360, Inventor  
**Cloud:** Microsoft Azure, Oracle Cloud, AWS  
**Platforms:** Windows, Linux