

# Rajat Jaiswal

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## WORK EXPERIENCE

**TradeScience** | Quantitative Analyst Aug. 2020 – Present

- Analyzing stock market data to identify pattern for **designing trades**.
- Implementing and **backtesting** quantitative trading strategies.
- Reviewing post trade statistics to **optimize strategy** performance.

## INTERNSHIPS

**Adobe Research** May 2020 – July 2020

- Devised a framework for **DNN based lossy image compression**.
- Proposed an end-to-end trainable **compressive autoencoder**.
- Formulated a rate-distortion optimization for **variable-rate compression** while ensuring imperceptible loss in visual quality.
- Designed an **importance map network** for guiding bit allocation to different part of an image, adaptive to spatially variant local content.

**Taipei Medical University** June 2019 – July 2019

- Conducted extensive study to **investigate correlation** between objective & subjective **measurements of sleep quality** in cancer patients, collected through wearable sensor & questionnaires.
- Achieved moderate correlation with **high statistical significance**.

## PROJECTS

**PageRank using MapReduce**

Parallel & Distributed Programming Mar. 2020 - Apr. 2020

- Solved the PageRank algorithm using the MapReduce paradigm.
- **Implemented MapReduce** library using message passing interface.
- Compared the implementation with standard MapReduce-MPI and MapReduce-C++ library, **achieved lowest latency** on 100,000 pages.

**Functional Language Interpreter**

Programming Languages Mar. 2019 - Apr. 2019

- Implemented a **compiler** with Krivine and SECD machine semantics.
- Designed a **lex scanner** to convert a program into tokens which is used for generating an **abstract syntax tree** using a recursive **parser**.

**Advanced RISC Machine based processor**

Computer Architecture Feb. 2019 - Apr. 2019

- Designed a **32-bit CPU** for complete ARMv7 **pipelined** instruction set in VHDL and **implemented** it on field programmable gate array
- Developed **software drivers** in ARMv7 for interrupts, I/O, & display.

**Traffic Simulator**

Software Design Jan. 2019 - Feb. 2019

- Designed a **simulator in C++** for **Indian road traffic** intersection.
- Formulated **realistic lane change** behavior, visualizable on command line as well as graphical user interface (rendered using OpenGL).

**Data Visualization in Health Informatics**

Machine Learning Dec. 2018 - May 2019

- Discovered trends & clusters in laboratory test results of **100,000+ patients**, leading to **reduced costs** by identifying **redundant tests**.
- Deduced similarities & observed inter-relationship between tests.

## EDUCATION

**Indian Institute of Technology Delhi**

B.Tech. & M.Tech. in Computer Science & Engineering July 2017 - Present  
CGPA : **9.308 / 10.0** Expected June 2022

**Bansal Public School** Class XII, CBSE  
Score: **94.40%** Apr. 2015 - Mar. 2017

**Little Flower School** Class X, ICSE  
Score: **95.67%** Apr. 2015 - Mar. 2017

## ACADEMIC ATTAINMENTS

**Department Rank** 2017 - Present  
Consistently ranked **4<sup>th</sup>** in the CSE department.

**Semester Exchange** 2019  
Nominated by IIT Delhi to **Concordia University, Canada** (Fall 2019), amongst 850+ students.

**GASE Summer Program** 2019  
Awarded for **3<sup>rd</sup> best research** out of 34 students from 11 countries in the program, by **Ministry of Science & Technology, Taiwan**.

**IIT Delhi Semester Merit Award** 2019  
Honoured for being among the **top 7%** academic performers of the institute in spring semester.

**Alumni Merit Scholarship** 2017  
Granted for academic excellence by IIT Delhi, for 4 years (2017-21), out of 800+ applicants.

**Joint Entrance Examination** 2017  
Secured **All India Rank 605** among 1.2 million students, and scored **119 out of 122** in Maths.

## TECHNICAL SKILLS

**Programming Languages**

Python • Java • C • C++ • OCaml • Matlab  
MySQL • PHP • JavaScript • VHDL • ARMv7

**Softwares & Frameworks**

PyTorch • Git • MPI • MapReduce • ARMSim  
Vivado • OpenMP • OpenGL • MKL • OpenBlas

## COURSEWORK

- Probability Theory & Stochastic Processes
- Data Structures & Algorithms
- Machine Learning • Operating Systems
- Parallel & Distributed Programming
- Optimization Methods & Applications
- Automata & Theory of Computation
- Discrete Mathematical Structures
- Signals & Systems • Databases
- Microeconomics • Macroeconomics
- Introduction to Business & Management