

Gobind Singh

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Education

Indian Institute of Technology, Delhi

July' 16 - July' 20

B.Tech. | Physics & Computer Science | Overall GPA : **9.2/10** | CS **GPA: 9.4/10** | **Rank 2/60** students

Key Courses: Linear Algebra, Probability, Data Structures, Algorithms, Databases, Signals & Systems, Mathematical Physics, Machine Learning, Artificial Intelligence, Group Theory, General Relativity, Game Theory, Computational Physics

Experience

Quantitative Strategist, Goldman Sachs

Feb '22 - Present

Structured Finance and Lending, Global Markets Division

Building mathematical models for pricing, structuring and market making of **exotic credit derivatives**

Creating a novel derivative - **collateralized cross currency callable swap**; by defining payoffs; modelling credit, interest rates and FX using stochastic calculus and Monte Carlo simulations; and developing the pricing engine in **Slang and C++**

Quantitative Researcher, Kivi Capital

Sep '20 - Feb' 22

Low and Medium Frequency Trading Team, Kivi Capital, Gurgaon

Researched, back-tested and deployed **live trading strategies** on F&O segment for Indian markets, consisting of novel alphas assisted with risk management, satisfying Sharpe Ratio and ROC thresholds, with holdings from **1 hour to 3 days**

Worked on **portfolio optimization problems** - building meta-alphas based on live strategy metrics to allocate capital efficiently, and building novel correlation measures to cluster strategies

Worked as a **hybrid quant developer** mainly building a back-testing and trading infrastructure for Forex commodities, with side projects in order management systems (OMS) and data management

Software Development Intern, Citi

May '19 - July '19

Citi-Connect Team, Trade and Treasury Solutions, Citi Pune

Built a trainable **web-page automation** bot using **Selenium, Javascript and Python** by learning a data-dynamic policy for MDPs generated from webpages, resulting in optimised software engineering pipelines

Summer Researcher, University of Tokyo

May '18 - July '18

Ando Gravitational Wave Lab, Physics Department, University of Tokyo

Among **22** students selected globally from **600+ applicants** to participate in fully funded research, working towards the noise characterisation of the torsion bar **gravitational wave detector**, TOBA using differential equations based models

Research Projects

Neuro-Symbolic Transfer Learning

Jan' 20 - July' 20

Supervisor - Prof Mausam and Prof Parag Singla, Dept. of Computer Science, IIT Delhi

Building a generalised neural planner for allowing efficient training and **zero-shot transfer** of policies across different probabilistic RDDL planning domains using **graph attention networks** and auxiliary domain-based tasks for the A3C algorithm

Error Correction for Quantum Key Distribution

Jul' 19 - Dec' 19

Supervisor - Prof Bhaskar Kanseri, Physics Department, IIT Delhi

Formulated error correction as a **linear programming** optimisation problem using a quantum-secure shared secret, and investigated local search and LDPC based message passing algorithms to solve the optimisation problem efficiently **Symbolic**

Planner for a Robotic Manipulator

Feb' 20 - Apr' 20

Course Project - Machine Learning for Robotics under Prof Rohan Paul, Dept. of Computer Science, IIT Delhi

Wrote a search based symbolic planner for an agent (mobile manipulator) capable of interacting with objects in a physics based virtual environment, and performing basic pick and place tasks, endowing the robot with semantics

Extra-Curriculars

Coordinator, Economics Club

July '18 - Apr '19

Part of a team of coordinators, handling the daily operations of the club and leading an executive team of 20 people, with focus on shaping the creative output (posters, videos etc) and outreach for all the club's events

Teaching Assistant, Database Management Systems

Jan '20 - Jun' 20

Teaching assistant for the course Databases with **100+ students** under Prof. Maya Ramanath in the Spring' 20 semester

Academic Mentor, Linear Algebra & Differential Equations

Jan '18 - Apr' 18

Mentored freshmen and solved student doubts for the course with **400+** students in Spring' 18

Scholastic Achievements

Awarded the **IIT Delhi Merit Prize** in 5 semesters for being in the top 7 percentile among all undergraduates (800+)

Secured **99.8** percentile in JEE Main and Advanced 2016 amongst **1.2 million** candidates

Selected for the **Advanced Standing M.Tech** in **Computer Science** at IIT Delhi (Declined)

Technical Skills

Programming Languages - Python, C/C++, Slang

Libraries / Tools - Tensorflow, PyTorch, OpenCV, NLTK, SQL, Spektral, Pandas, Selenium, Git, Bash, Linux \LaTeX