

Mani Tyagi

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Portfolio Website

EDUCATION

IIT DELHI

BS IN CIVIL ENGINEERING

Jun 2017 - Present | New Delhi

Indian Institute of Technology Delhi

CAMBRIDGE SCHOOL

CS AND MATHEMATICS

Grad. 2016 | Noida, India

XII CBSE GPA : 93 / 100

LINKS

Github:// [outmanipulate](#)

LinkedIn:// [mani.tyagi](#)

Codechef:// [outmanipulate](#)

Codeforces:// [outmanipulate](#)

COURSEWORK

- Data Structures and Algorithms
- Machine Learning
- Probability and Statistics
- Calculus and Differential Equations
- Number Theory

SKILLS

SOFTWARE DEVELOPMENT

- C++14 • Python • Javascript
- MATLAB • MongoDB
- React Native • NetBeans
- MySQL • HTML • CSS

MACHINE LEARNING

- Basics : Gradient Descent, Regression, ANN, Natural Gradient
- Reinforcement learning : Q-Learning, DQN, Vanilla Policy, Actor-Critic
- Natural Language Processing
- Tensorflow • Keras

PUBLICATIONS

- Impact of Lockdown in Air Contamination Levels of New Delhi

ECA

- Poker - Over 17,000 USD Total Winnings
- Pokerstars Profile:// [outmanipulate](#)
- Debating : APD BP
- Broke in Intra IIT APD

EXPERIENCE

UNIVERSITY OF SYDNEY | RESEARCH INTERN

May, 2018 – Aug, 2018 | Sydney, NSW, Australia

- Implemented **reinforcement** techniques like **Q learning** and **policy iteration** using **MCMC sampling** and **parallel tempering** on atari games like cartpole.

CODECHEF | PROGRAMMING EDUCATOR

July, 2020 - Present | New Delhi, India

- Made video **editorials** on various **data structures** and problem solving paradigms like Greedy, **Dynamic Programming**, Bitwise operations, Sparse Table, Fenwick Trees, Segment Trees, **Minimum Spanning Trees** etc.

PROJECTS

BLACK-SCHOLES DELTA HEDGING

- Established and maintained an effective **risk-free portfolio** of **European options** by using **Black Scholes** model to calculate the delta every tick and rapidly **rehedging** on the basis of that delta.
- Modelled underlying asset using **Geometric Brownian Motion** and the derivative pricing using **binomial trees**.

EARLY EARTHQUAKE DETECTION (MICROSOFT)

- Applied **Logarithmic Regression** on characteristic features of **P-waves** and predicted the final magnitude of the incoming **Earthquake** 3-7 minutes early.
- Determined whether buildings would be able to withstand the **shear stress** of that magnitude using **Rao's formula**

FACE MASK DETECTION

- Wrote a python script to run on live video streams to **detect** whether the person is wearing a **face mask** with the test data accuracy of over **96 percent**.
- Built the framework using **Keras**, **TensorFlow**, **OpenCV** and **MobileNET**.

STOCK PREDICTION USING NLP AND BERT

- Harnessed Google's **BERT** model for **contextual language processing** on publicly available **SEC 8-K forms**
- **Predicted** and correlated the **S&P 500** by overcoming drawbacks of **directional** models with **MLM** and **NSP**

CBS CASE STUDY COMPETITION : CARLSBERG

- Consulted on how **Carlsberg** can further disrupt traditional on-trade channels in order to digitally engage with consumers and **increase revenue growth** to **5 percent** in the European by 2022.

NOTABLE ACHIEVEMENTS

- 2017 Secured 99.94 percentile in **JEE** among 1.2 million students
- 2017 National Negotiation Table 2017 **Investment Bank** Winner
- 2018 **WorldQuant** Alphathon **Silver** Medalist
- 2019 Secured 6500 USD scholarship for **research fellowship** at **University Of Sydney**
- 2019 **Microsoft** **Codefundo ++** Hackathon Runner Up
- 2020 Secured 1st position in International **Codechef** **Creator** contest
- 2020 Secured 592 rank in **Google** **Kickstart**