# Deepanshu Malhotra

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## Education

**University School of Information, Communication and Technology**
**Guru Gobind Singh Indraprastha University** — New Delhi, India
*B.Tech, Computer Science and Engineering* — *August 2015 - May 2019*
**Honor: Gold Medal (Department Rank 1)** — GPA: 8.5/10

## Journal Publications

- **Deepanshu Malhotra** and Rinkaj Goyal. *Link prediction in complex networks using information-theoretic measures*, Journal of Complex Networks, Oxford University Press.
  DOI: https://doi.org/10.1093/comnet/cnaa035.
- **Deepanshu Malhotra**. *Community Detection in Complex Networks using Link Strength based Hybrid Genetic Algorithm*, SN Computer Science, Springer. DOI: https://doi.org/10.1007/s42979-020-00389-4.

## Projects

**Link Prediction and Assessment in Complex Networks** — New Delhi
*Guide: Prof. Rinkaj Goyal, USICT, GGSIPU* — *Spring 2019*

- Implemented a homophily based machine learning model for predicting the links in complex networks.
- The model attained 98% accuracy for finding the true links.
- Coded different structural similarity methods for assessing the strength of the connection between a pair of nodes.

**Reinforcement Learning in Multiagent Systems** — New Delhi
*Guide: Prof. Anuradha Chug, USICT, GGSIPU* — *Fall 2018*

- Developed a multi-agent environment, a game of pong in this case.
- Trained the two agents (paddles in the pong game) individually, with the Deep Q-learning model.
- Successfully reduced the training time by tuning the parameters of the deep learning model, and further storing, reusing the best actions and rewards for each update.

**Object Detection and Tracking** — New Delhi
*Guide: Prof. Ruchi Sehrawat, USICT, GGSIPU* — *Spring 2018*

- Performed a Histogram of Oriented Gradients feature extraction, color transformation on a labeled training set of images.
- Trained an SVM image classifier, and implemented a sliding-window technique to search for vehicles in images.
- Created a heat map of recurring detections frame by frame, and followed detected vehicles in a video stream.

## Programming Skills

**Languages**: C , C++, Python, Java, MATLAB, HTML, MY SQL, NetLogo, LaTeX.

**Areas**: Social Network Analysis, Artificial Intelligence, Machine Learning, Reinforcement Learning, Computer Vision, Algorithms, Databases, Mathematics.

## Experience

**USICT, GGSIPU** — New Delhi
*Research Intern, Guide: Prof. Rinkaj Goyal* — *November 2018 - Present*

- Researched on a problem for predicting links in the complex networks.
- Developed three new algorithms that combined unsupervised learning methods with the information theoretic techniques for predicting the connections.
- First-authored research work got accepted in the Journal of Complex Networks, Oxford University Press.

**Institute of Systems Studies and Analysis, DRDO** — New Delhi
*Guide: Dr V.G. Patil* — *May 2018 - August 2018*

- Worked on the application of Q-learning technique to balance a pole on a cart.
- The program was able to balance the pole for more than 200 time steps in limited iterations (150-200).

**BSES Rajdhani Power Limited (BRPL)** New Delhi

*Intern* *December 2017 - January 2018*

- Studied about SCADA (Supervisory control and data acquisition) which is a system of software that monitors, gathers, and processes real-time data from devices such as sensors, valves, power grids, etc.

## Accomplishments

Awarded **Gold Medal** for standing **First** in the order of merit in B.Tech. Computer Science and Engineering.

Qualified for ACM ICPC Multisite Regionals 2018 at the Kanpur site.

Qualified for ACM ICPC Multisite Regionals 2016 at the Coimbatore site.

Qualified IPU CET in the top 2% of the candidates to secure a seat in the most prestigious college under Guru Gobind Singh Indraprastha University.

## Relevant Online Courses

Self-Driving Car Engineer Nanodegree Udacity; Neural Networks and Deep Learning (coursera); Improving Deep Neural Networks: Hyperparameter tuning; Regularization and Optimization (coursera); Structuring Machine Learning Projects (coursera); Machine Learning (coursera); Reinforcement Learning (on udacity by georgia tech).