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 (*B.Tech CSE Rank 1*) — GPA: 8.5/10

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 Assistant, Guide: Prof. Rinkaj Goyal — *November 2018 - Present*
- Developed three new algorithms that combined unsupervised learning methods with the information theoretic techniques for predicting the connections. Our research got published in the Journal of Complex Networks, Oxford University Press.
- Currently working on supervised learning approaches for predicting links in single layer and multiplex networks.

Institute of Systems Studies and Analysis, DRDO — New Delhi
Guide: Dr V.G. Patil — *May 2018 - August 2018*
- Studied various reinforcement learning methodologies and identified Q-learning technique for its efficiency and accuracy.
- Subsequently applied Q-learning 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.

PUBLICATIONS

- **Deepanshu Malhotra** and Rinkaj Goyal. *Supervised-Learning Link Prediction in Single layer and Multiplex networks*, Machine Learning with Applications, Elsevier. Status - Under Review.
- **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.
- **Deepanshu Malhotra** and Rahul Katarya. *A Survey of Different Methods in Finding Latent Relationships among Complex Networks*, International Conference on Information Systems and Computer Networks (ISCON), 2019, IEEE.

PROJECT WORK

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 *(Link)* — New Delhi
Guide: Prof. Anuradha Chug, USICT, GGSIPU — *Fall 2018*
- Developed a multi-agent environment, a game of pong in this case and 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 *(Link)*
Self-Driving Car Engineer Nanodegree Udacity — *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.