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

Guide: Prof. Ralucca Gera (Naval Postgraduate School, Monterey, CA 93943, USA) — Remote
Research Collaborator — *June 2021 - November 2021*
- Proposed a novel solution for detecting communities by utilizing semilocal structural features for a label propagation based algorithm.
- Our algorithm showed improved performances on a variety of data sets for detecting disjoint communities.

USICT, GGSIPU — New Delhi
Research Assistant, Guide: Prof. Anuradha Chug — *March 2021 - July 2021*
- Developed a novel community detection approach in complex networks. Utilized the node attributes to generate relevant communities from the nodes in the network.
- The proposed approach is able to execute in linear time and is scalable to large network data sets.

USICT, GGSIPU — New Delhi
Research Assistant, Guide: Prof. Rinkaj Goyal — *November 2018 - April 2021*
- 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.
- Simultaneously worked 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. 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.

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 Anuradha Chug. *A modified label propagation algorithm for community detection in attributed networks*, IJIM Data Insights, Elsevier. DOI: https://doi.org/10.1016/j.jjimei.2021.100030.
- **Deepanshu Malhotra** and Rinkaj Goyal. *Supervised-Learning Link Prediction in Single layer and Multiplex networks*, Machine Learning with Applications, Elsevier. DOI: https://doi.org/10.1016/j.mlwa.2021.100086.
- **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

Reinforcement Learning in Multiagent Systems *(Link)* — New Delhi
Guide: Prof. Anuradha Chug, USICT, GGSIPU — *Fall 2018*
- Developed a multi-agent environment, i.e., a game of pong, and trained the two agents individually, with the Deep Q-learning model. Successfully reduced the training time by tuning the parameters of the deep learning model.

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 a video stream.