# MRIGANK RAMAN

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## EDUCATION

**Indian Institute of Technology, Delhi** *2017-2021*
B.Tech in Mathematics & Computing
Overall GPA: 9.679
Research Area: NLP, Knowledge Graphs, Commonsense Reasoning, Graph Representation Learning

## PUBLICATIONS

### Conference Publications

1. Domain Generalization via Inference-time Label-Preserving Target Projections (***Oral***)
   Prashant Pandey, **Mrigank Raman**, Sumanth Varambally, Prathosh AP
   *34th Conference on Computer Vision and Pattern Recognition, 2021 (**CVPR 2021**)*

2. Learning to Deceive Knowledge Graph Augmented Models via Targeted Perturbation
   **Mrigank Raman**, Hansen Wang, PeiFeng Wang, Siddhant Agarwal, Sungchul Kim, Ryan Rossi, Handong Zhao, Nedim Lipka, Xiang Ren
   *9th International Conference on Learning Representations, 2021 (**ICLR 2021**)*

3. Learning Contextualized Knowledge Structures for Commonsense Reasoning
   Jun Yan, **Mrigank Raman**, Aaron Chan, Tianyu Zhang, Ryan A. Rossi, Handong Zhao, Sungchul Kim, Nedim Lipka, Xiang Ren
   *The Joint Conference of the 59th Annual Meeting of the Association for Computational Linguistics and the 11th International Joint Conference on Natural Language Processing, 2021 (**ACL 2021**)*

4. Centralized Active Tracking of a Markov Chain with Unknown Dynamics
   **Mrigank Raman**, Ojal Kumar, Arpan Chattopadhyay
   *17th IEEE International Conference on Mobile Ad-Hoc and Smart Systems, 2020 (**MASS 2020**)*

### Workshop Publications

1. Learning to Deceive Knowledge Graph Augmented Models via Targeted Perturbation
   **Mrigank Raman**, Siddhant Agarwal, Peifeng Wang, Xiang Ren
   *34th Conference on Neural Information Processing Systems, 2020 KR2ML Workshop*
   **Best paper runner-up**

2. Learning Contextualized Knowledge Structures for Commonsense Reasoning
   Jun Yan, **Mrigank Raman**, Tianyu Zhang, Ryan A. Rossi, Handong Zhao, Sungchul Kim, Nedim Lipka, Xiang Ren
   *34th Conference on Neural Information Processing Systems, 2020 KR2ML Workshop*

## SELECTED RESEARCH PROJECTS

**Domain Generalization for Image Classification** June 2020 - November 2020
Advisor: Dr. Prathosh AP, IIT Delhi

- Learned a domain-agnostic and label preserving feature space using a contrastive loss formulation
- Used a generative model to project the target features onto the source feature manifold to improve generalizability
- Acheived SOTA results on PACS, VLCS, Office-Home, Digits-DG and CIFAR-10-C datasets

**Learning to Deceive Knowledge Graph based models** May 2020 - October 2020
Advisor: Dr. Xiang Ren, USC Viterbi

- Performed different types of perturbations on the semantics and connectivity of the Knowledge Graph using RL and heuristics.
- Demonstrated that symbolic structures are not learnt in a manner humans expect them to.
- Highlighted the implausibility and unfaithfulness of explanations generated by the neural symbolic models.

## WORK EXPERIENCE

**Quantitative Strategist at Quadeye Securities** June 2021 - ongoing

- Responsible for the running and improvement of algorithmic high frequency trading strategies in the options market.
- Designed an improved pricing alpha responsible for better price prediction in the trading strategies.
- Designed a trading strategy for trading in Indian index options.

## SELECTED AWARDS AND HONORS

- Conferred with the **Institute Silver Medal** for securing the highest GPA in the whole Mathematics Department.
- Awarded with the Institute Merit award for being amongst **Top 7%** students of the entire batch for 6 out of 8 semesters.
- Was **one** amongst 14 students from all over India to be awarded with the **IUSSTF-Viterbi India 2020 scholarship**.
- Secured an All India Rank of **183** in the Joint Entrance Examination amongst 1.2 million candidates
- Selected to join the first **AI Summer School** hosted by Google Research India in 2020
- Awarded the prestigious KVPY Fellowship in 2016 with an All India Rank of **222**

## TEACHING

- Teaching Assistant for UG course on Algebra; responsible for taking doubt sessions
- Teaching Assistant for UG course on Real Analysis; responsible for taking doubt sessions

## TECHNICAL STRENGTHS

**Computer Languages** C/C++, Java, Python, MATLAB
**Frameworks** Pytorch, Tensorflow, Caffe, OpenAI Gym

## RELEVANT COURSES

**Mathematics :** Probability and Stochastic Processes, Statistical Methods, Optimization Methods, Functional Analysis, Linear Algebra and Applications, Numerical Methods, Abstract Algebra, Real and Complex Analysis, Differential Equations, Discrete Mathematics, Calculus, Number Theory

**Computer Science :** Machine Learning, Data Structures and Algorithms, Theory of Computation, Analysis and Design of Algorithms, Computer Architecture, Digital Logic, Introduction to Programming, Signals and Systems, Operating Systems, Data Mining

**Graduate Level :** Advanced Machine Learning, Special Topics in Database Management Systems, Natural Language Processing, Cryptography and Computer Security, Digital Image Analysis, Information Retrieval, Graph Theory, Multivariate Statistical Methods, Fractal Geometry