

Mansi Sood

Curriculum Vitae

Department of Electrical and Computer Engineering,
Carnegie Mellon University, Pittsburgh.

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Research Interests: Network Science, Optimization, Learning and Privacy

EDUCATION

Carnegie Mellon University, Pittsburgh, PA:

Fall '18 - present

- *PhD Student* in **Electrical & Computer Engineering (ECE)** **GPA: 4.0/4.0**
Advisor: Prof. Osman Yağan

Indian Institute of Technology (IIT) Bombay, India:

Jul '13 - Jul '18

- *Bachelor of Technology and Master of Technology* in **Electrical Engineering**.

AWARDS & HONOURS

- **Philip and Marsha Dowd Fellowship**, College of Engineering, CMU. '20 - '21
- **Presidential Fellowship**, CyLab, CMU. '20 - '21
- **Knight Fellowship**, Center for Informed Democracy and Social Cybersecurity (IDeaS), CMU. *Fall '20*
- **CMU ECE GHC Scholarship** to attend the Grace Hopper Conference. '20
- **David H. Barakat & LaVerne Owen-Barakat CIT Dean's Fellowship**, CMU. '19
- Travel Support for **Women in Data Science & Mathematics**, ICERM, Brown University. '19
- **Carnegie Institute of Technology (CIT) Dean's Fellowship**. '18 - '19
- **Certificate of Excellence** for '*Exceptional research as an undergraduate and contributions towards the Academic Mentorship Programme*' at IIT Bombay. (Awarded to **1** among **120** students.) '18
- **Excellence in Teaching Assistantship**, Electrical Engineering Department, IIT Bombay. '18
- **All India rank 6** amongst **1,100,000** students in All India Engineering Entrance Examination. '12
- **Kishore Vaigynaik Protsahan Yojana (KVPY) Fellowship** by Government of India. '11
- **Junior Science Talent Search** Scholarship by Science Branch of Education, New Delhi, India. '09

RESEARCH PAPERS

In Peer-reviewed Conferences/Journals

- **M. Sood**, O. Yağan, '*On the Size of the Giant Component in Inhomogeneous Random K -out Graphs*', to appear in IEEE Conference of Decision and Control (CDC) 2020. '20
- **M. Sood**, O. Yağan, ' *k -Connectivity in Random Graphs induced by Pairwise Key Predistribution Schemes.*', Proceedings of IEEE International Symposium on Information Theory (ISIT) 2020. '20
- **M. Sood**, O. Yağan, '*Towards k -connectivity in Heterogeneous Sensor Networks under Pairwise Key Predistribution.*', Proceedings of IEEE Global Communications Conference (GLOBECOM) 2019. '19
- **M. Sood**, S. Moharir & A. A. Kulkarni, '*Pricing and Commission in Two-Sided Markets with Free Upgrades*', Springer's Lecture Notes in Computer Science (LNCS) 2018, preliminary version appeared in Proceedings of IEEE International Conference on Communication Systems and Networks 2018. '18
- **M. Sood**, A. A. Kulkarni & S. Moharir, '*Platform Competition for Throughput in Two-sided Freelance Markets*', Proceedings of IEEE International Conference on Signal Processing and Communications 2018. '18

Preprints

- **M. Sood**, O. Yağan, 'On the Minimum Node Degree and k -connectivity in Inhomogeneous Random K -out Graphs', under review with IEEE Transactions on Information Theory. '20
- **M. Sood**, O. Yağan, 'Tight bounds for Connectivity of Random K -out Graphs.' '20
- **M. Sood**, A. A. Kulkarni & S. Moharir, 'Platform Competition for Throughput & Revenue in Two-sided Freelance Markets'. '20

RESEARCH PROJECTS

Network Topology and Spreading Dynamics on Random Networks, CMU. *Aug'18 - ongoing*
Advisor: Prof. Osman Yağan

- Analyzing the role of evolutionary adaptations in the spread of infectious diseases over multi-layer contact networks and misinformation over social networks.
- Designing reliably connected network topologies with applications in sensor networks, cryptocurrency networks and distributed learning.

Hiding the Metadata of Communications, ICERM, Brown University. *Aug'19 - ongoing*
Joint work with collaborators from Women in Data Science and Mathematics (WiSDM) 2019

- Analyzing delay-anonymity tradeoffs of anonymity mixes for facilitating sender-receiver unlinkability.

Service Capacity Region for Erasure Coded Content, Carnegie Mellon University. *Sep'18 - Dec'18*
Supervisor: Prof. Gauri Joshi

- Surveyed and analyzed the use of coding and queuing theoretic approaches for concurrent file retrieval.

Masters Thesis: Pricing in Two-sided Markets, IIT Bombay. *Jan'17 - Jul'18*
Supervisors: Prof. Sharayu Moharir, Prof. Ankur A. Kulkarni

- Modeled and analyzed online markets with multiple platforms and service classes.

Online Interest-based Targeted Advertising, Industrial Design Centre, IIT Bombay: *Jan'18 - May'18*
Supervisor: Prof. Venkatesh Rajamanickam

- Examined information asymmetry in generation and processing of online data among users and platforms.

Biases in Cognition, Industrial Design Centre, IIT Bombay. *Jan'17 - Jun'17*
Supervisor: Prof. Venkatesh Rajamanickam

- Organized over 150 biases into tractable categories with illustrative examples for a learning toolkit.

TEACHING & MENTORSHIP

- **Teaching Assistant** for **Graduate Courses** on Probability, Real Analysis & Communication Networks.
18665: **Advanced Probability & Statistics for Engineers**, Carnegie Mellon University. *Spring '20*
18751: **Applied Stochastic Processes**, Carnegie Mellon University. *Spring '19*
EE706: **Communication Networks**, IIT Bombay. *Spring '18*
EE759: **Applied Mathematical Analysis in Engineering**, IIT Bombay. *Fall '17*
Mathematical Preliminaries, IIT Bombay. *Jul'17*
- **Mentor**, Society of Women Engineers (SWE), CMU. '20
- **Department Academic Mentor** to 11 undergraduate students; awarded **Certificate of Excellence** by the Department of Electrical Engineering, IIT Bombay. '16 - '18
- Undertook training in **Science Communication** through Phipps Conservatory and Botanical Gardens. '20

COURSEWORK

Optimization, Graph Theory, Foundations of Cloud & Machine Learning Infrastructure, Foundations of Privacy, Markov Chains & Queueing Theory, Advanced Concentration Inequalities, Data Analysis, & Linear Algebra, & Interpretation, Probability & Random Processes, Real Analysis, Calculus, Computer Programming, Communication Networks, Information Theory & Coding, Control Systems, Signal Processing.

VOLUNTEER EXPERIENCE

- Volunteer, Society of Women Engineers (SWE) Middle School Day, CMU. '20
- Donated original artworks for raising funds for Angels' Place Pittsburgh, an organization providing early childhood care to families in need of support. '20
- Member, Cultural Activities Team, Indian Graduate Student Association, CMU. '20
- Volunteer, Energy and Information Systems (EIS) Seminar Series, ECE, CMU. '19
- Member, *National Youth Delegation* selected by Government of India for participating in cultural exchange programs in South Asia. '17
- Secretary, Institute Photography and Fine Arts Committee, IIT Bombay. Initiated weekly art classes for children of transient migrant labourers employed at various sites in the campus. Directed a team of volunteers to organise an art exhibition showcasing artworks of over 1000 campus residents. '15 - '16