

Taha Ameen

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Research Interests

Network Science, Stochastic Systems, Random Graphs, Statistical Inference, Matching Markets.

Education

University of Illinois Urbana-Champaign
PhD in Electrical and Computer Engineering

Sep 2020 – Present
GPA: 4.0/4.0

American University of Sharjah
BS in Electrical Engineering
BS in Mathematics

Sep 2015 – Dec 2019
GPA: 4.0/4.0
GPA: 4.0/4.0

Awards and Fellowships

Best Paper Awards

- Jack Keil Wolf ISIT Student Paper Award 2025
- IISA Best Student Paper Award in Applications of Statistics and Data Science, *Finalist* 2025
- INFORMS APS Best Student Paper Prize, *Finalist* 2024

Fellowships

- A.R. “Buck” Knight Fellowship 2025
- MAVIS Future Faculty Fellowship 2024
- Robert T. Chien Memorial Award in Electrical Engineering 2024
- Joan and Lalit Bahl Fellowship 2023, 2022
- James M. Henderson Fellowship 2021
- President’s Cup, *highest GPA in undergraduate class* 2019
- Sheikh Khalifa Scholarship 2019
- Chancellor’s Scholar Award, *100% tuition waiver for undergraduate study* 2015 – 2019

Travel Grants

- INFORMS Applied Probability Society Travel Grant 2025
- IEEE International Symposium of Information Theory Travel Grant 2025
- International Indian Statistics Association Travel Grant 2025

Publications and Preprints

Preprints and Working Papers

4. [T. Ameen](#), F. Sentenac and S. H. Yu, “A Uniformity Principle for Spatial Matching”, *Under review at ACM Symposium on Theory of Computing*. [\[arXiv\]](#)
3. [T. Ameen](#) and B. Hajek, “Detecting Planted Structure in Circular Data”, *Under review at IEEE Transactions on Information Theory*. [\[arXiv\]](#)
2. [T. Ameen](#) and B. Hajek, “Aligning Multiple Inhomogeneous Random Graphs: Fundamental Limits of Exact Recovery”, *Under review at Operations Research*. [\[arXiv\]](#)
 - Finalist at IISA Best Student Paper Award in Applications of Statistics and Data Science.

1. [T. Ameen](#), K Kytölä and S.C. Park, “Slit-strip Ising boundary conformal field theory 2: Scaling limits of fusion coefficients”, *Under review at Probability and Mathematical Physics*. [\[arXiv\]](#)

Accepted Publications

12. **[ISIT’25b]** [T. Ameen](#) and B. Hajek, “Detecting correlation between multiple unlabeled Gaussian networks”, *IEEE International Symposium on Information Theory (ISIT) ’25*. [\[arXiv\]](#)
11. **[ISIT’25a]** [T. Ameen](#) and B. Hajek, “Exact random graph matching with multiple graphs”, *IEEE International Symposium on Information Theory (ISIT) ’25*. [\[arXiv\]](#)
 - Winner of Jack Keil Wolf ISIT Student Paper Award, 2025.
 - Finalist at INFORMS APS Best Student Paper Competition, 2024.
 - Poster presented at *Stochastic Networks Conference*, 2024.
10. **[ICML’24]** [T. Ameen](#) and B. Hajek, “Robust graph matching when nodes are corrupt”, *International Conference on Machine Learning*, 2024. [\[Link\]](#)
9. **[TAC’23]** [T. Ameen](#), S. Mukhopadhyay and N. Qaddoumi, “Computing robust forward invariant sets of multidimensional nonlinear systems via geometric deformation of polytopes”, *IEEE Transactions on Automatic Control*, 2023. [\[Link\]](#)
8. **[WDC’22]** [T. Ameen](#), S. Sankagiri and B. Hajek, “Blockchain security when messages are lost”, *ACM Workshop on Developments on Consensus*, 2022. [\[Link\]](#)
7. **[MPAG’22]** [T. Ameen](#), K. Kytölä, S.C. Park and D. Radnell, “Slit-strip Ising boundary conformal field theory 1: Discrete and continuous function spaces”, *Mathematical Physics, Analysis and Geometry*, Springer, 2022. [\[Link\]](#)
6. **[FE’22]** S. Shahriar, J. Ramesh, A. Towheed, [T. Ameen](#), A. Sagahyroon and A. Al-Ali, “NICE: Narrative Integrated Career-Exploration Platform”, *Frontiers in Education*, 2022. [\[Link\]](#)
5. **[DCC’21]** UIUC Info Theory Students, S. Basu and L. Varshney, “The twelvefold way of non-sequential lossless compression”, *IEEE Data Compression Conference*, 2021. [\[Link\]](#)
4. **[Access’20]** [T. Ameen](#), M. Hasan and M. Ismail, “A Novel Medium Access Control Algorithm for Ad Hoc Networks based on Ising Model”, *IEEE Access*, 2020. [\[Link\]](#)
3. **[PhyCom’20]** [T. Ameen](#), Y. Aborahama, M. Hasan and M. Ismail, “A PDE-based approach for the evaluation of probability of starvation in video streaming”, *Physical Communication*, Elsevier, 2020. [\[Link\]](#)
2. **[WTS’20]** [T. Ameen](#), M. Hasan and M. Ismail, “A queue-length based approach to metropolized Hamiltonians for distributed scheduling in wireless networks”, *IEEE Wireless Telecommunications Symposium*, 2020. [\[Link\]](#)
1. **[Allerton’19]** [T. Ameen](#), S. Mukhopadhyay and S. Farhana, “A Novel Expression for Computing Time Response of LTI Systems of Arbitrary Order with Applications to Fractional and Stochastic Control”, *Allerton Conference on Communication, Control and Computing*, 2019. [\[Link\]](#)

Research Experience

PhD Research: University of Illinois Urbana-Champaign

Urbana, IL, USA

Statistical Inference on Random Networks

Aug 2022 – Present

- Studied fundamental limits of the graph matching problem – impacts of heterogeneity, multiple graphs and robustness considerations.
- Studied security of blockchain proof-of-work protocol under unbounded message delays.

Research Intern: Nokia Bell Labs

Murray Hill, NJ, USA

Efficient Hybrid Beamforming for Multiple Access in mmWave Systems

June 2022 – Aug 2022

- Designed and implemented a software framework to test and compare multiple access algorithms.
- Developed an algorithm for hybrid beamforming at base stations for 5G and beyond, accounting for throughput, latency and power efficiency.

Research Intern: Department of Mathematics, Aalto University*Scaling Limits of the Ising Model**Espoo, Finland**June 2019 – Aug 2019*

- Studied the scaling limit of the 2D Ising model in a novel geometry and its relation to conformal field theory.

Research Associate: American University of Sharjah*Microwave Sensing for Crack Detection in Railway Tracks**Sharjah, UAE**Dec 2019 – Aug 2020*

- Designed, developed and deployed an autonomous robot that uses microwaves to scan railway tracks for cracks and classifies their severity.
- The project included a sensing module, signal processing module, communications module and a neural network for crack severity estimation.

Selected Talks and Posters

- INFORMS Annual Meeting, Session on Applied Probability in Algorithmic and Operational Networks II, 2025.
- Cornell ORIE Young Researchers Workshop, 2025.
- INFORMS Applied Probability Society Conference, Session on High Dimensional Statistics, 2025.
- IEEE International Symposium on Information Theory, 2025.
- IISA Best Student Paper Award Talk, Statistics and Data Science Category, 2025.
- INFORMS APS Best Student Paper Award Competition, 2024.
- INFORMS Annual Meeting, APS Session on Theoretical Advances in Networks, Dynamics and Inference, 2024.
- IDEAL Workshop at Northwestern University, 2024.
- Stochastic Networks Conference, 2024.
- International Conference on Machine Learning, 2024.
- Coordinated Science Lab Student Conference at UIUC, 2024.
- ACM Workshop on Developments in Consensus, 2022.
- IEEE Wireless Telecommunications Symposium, 2020.
- Allerton Conference, 2019.

Coursework, Teaching, Service

PhD Coursework at UIUC.

- Electrical Engineering: Random Processes, Information Theory, Machine Learning, Optimization, Statistical Learning Theory, Control Systems, Communication Network Analysis, MDPs and Reinforcement Learning, Quantum Information Theory.
- Mathematics: Real Analysis, Probability Theory I, Probability Theory II, Combinatorial Optimization, High Dimensional Statistics, Stochastic Processes on Graphs.

Teaching and Mentorship.

- Teaching Assistant: ECE 534 (Random Processes): *Spring '24, Fall '24*. ECE 543 (Statistical Learning Theory): *Spring '25*.
- Undergraduate Mentor: Academic Support Center, 2016-19.

Reviewing

- Journals: Annals of Applied Probability, IEEE Transactions on Systems, Man and Cybernetics: Systems, Wiley International Journal of Robust and Nonlinear Control, IEEE Sensors.
- Conferences: ISIT, CDC, ACM Sigmetrics.

Technologies

Software: Python – *NumPy, PyTorch, Pandas*, C/C++, MATLAB, Simulink, Comsol, Mathematica, PSPICE, Multisim, Cadence, HFSS, MS Office Suites.