

Subhadeep Paul

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Experience

- 2017–Present **The Ohio State University**, Department of Statistics, Columbus, Ohio.
- Associate Professor of Statistics, 2023–Present
 - Assistant Professor of Statistics, 2017–2023.
 - Co-director of Community of Practice on Foundations of Data Science and AI (since 2022), and core faculty (since 2017), Translational Data Analytics Institute
 - Faculty member, Interdisciplinary PhD program in Biostatistics, 2017–Present.

Education

- 2012–2017 **Ph.D. in Statistics**, University of Illinois at Urbana-Champaign, IL.
Advisor: Professor Yuguo Chen
Dissertation: Consistent community detection in uni-layer and multi-layer networks
- 2007–2012 **Master of Science and Bachelor of Science (Honours) in Statistics and Informatics**, Indian Institute of Technology, Kharagpur, India.

Publications

A * indicates a student author whom I directly advised.

Published Work

1. Wang, S. S.*, **Paul, S.**, De Boeck, P., (2023+). Joint Latent Space Model for Social Networks with Multivariate Attributes. **Accepted at Psychometrika.**
2. Soliman, H., Zhao, L.*, Huang, Z., **Paul, S.**, Xu, K. (2022). The Multivariate Community Hawkes Model for Dependent Relational Events in Continuous-time Networks. **International Conference on Machine Learning (ICML 2022)**. PMLR 162 (pp. 20329-20346).
3. Huang, Z., Soliman, H., **Paul, S.**, Xu, K. (2022). A Mutually Exciting Latent Space Hawkes Process Model for Continuous-time Networks. **Conference on Uncertainty in Artificial Intelligence (UAI 2022)**. PMLR Volume 180 (pp. 863-873).
4. **Paul, S.**, Chen, Y. (2022). Null models and community detection in multi-layer networks. **Sankhya A**, 84 (1), 163-217.
5. 2. Minich, D., Madden, C., Navarro, M., Glowacki, L.*, French-Kim, K., Chan, W., Evans, M., Soares, K., Mrofchak, E., Madan, R., Ballash, G., LaPerle, K., **Paul, S.**, Vodovotz, Y., Uzal, F., Martinez, M., Hausmann, J., Junge, R., Hale V., (2022). Gut microbiota and age shape susceptibility to clostridial enteritis in lorikeets under human care. **Animal Microbiome** volume 4, Article number: 7.
6. Nicol, P. B., Coombes, K. R., Deaver, C., Chkrebtti, O. A., **Paul, S.**, Toland, A. E., Asiaee, A. (2021). Oncogenetic Network Estimation with Disjunctive Bayesian Networks: Learning from Unstratified Samples while Preserving Mutual Exclusivity Relations. **Computational and Systems Oncology**, 1(2), e1027.
7. **Paul, S.**, Chen, Y. (2020). Spectral and matrix factorization methods for consistent community detection in multi-layer networks. **The Annals of Statistics**, 48 (1), 230-250.

8. **Paul, S.**, Chen, Y. (2020). A random effects stochastic block model for joint community detection in multiple networks with applications to neuroimaging. *The Annals of Applied Statistics*, Volume 14, Number 2, pages 993-1029.
9. Arastuie M., **Paul S.**, Xu K. (2020). CHIP: A Hawkes process model for continuous-time networks with scalable and consistent estimation. *Advances in Neural Information Processing Systems (NeurIPS 2020)*, Vol 33 (pp. 16983-16996).
10. Howard-Varona, C., Lindback, M., Bastien, G., Solonenko, N., Zayed, A., Jang, H.B., Andreopoulos, B., Brewer, H., Glavina del Rio, T., Adkins, J., **Paul, S.**, Sullivan, M.B., Duhaime, M. (2020). Phage-specific metabolic reprogramming of virocells. *The ISME Journal*, 14 (4), 881-895.
11. Zimmerman, B.J., Finnegan, M.K., **Paul, S.**, Schmidt, S.A., Tai, Y., Roth, K.A., Chen, Y. and Husain, F.T. (2019). Functional Brain Changes During Mindfulness-Based Cognitive Therapy Associated with Tinnitus Severity. *Frontiers in Neuroscience*, 13, p.747.
12. **Paul, S.**, Chen, Y. (2016). Consistent community detection in multi-relational data with restricted multi-layer stochastic blockmodel. *Electronic Journal of Statistics*, vol. 10, no. 2, 3807–3870.
13. **Paul, S.**, Basu, A. (2015). On second order efficient robust inference. *Computational Statistics and Data Analysis*, 88C, 187-207.
14. Kiviniemi T.O., Yegutkin G.G., Toikka J.O., **Paul S.**, Aittokallio T., Janatuinen T., Knuuti J., Rönnemaa T., Koskenvuo J.W., Hartiala J.J., Jalkanen S., Raitakari O.T. (2012). Pravastatin-induced improvement in coronary reactivity and circulating ATP and ADP levels in young adults with type 1 diabetes. *Frontiers in Physiology*, 3, 338.

Submitted work and Preprints

15. Lovekar K.*, Sengupta, S., **Paul, S.**, (2023+). Testing for the network small-world property. *Revision invited from Biometrika. Preprint at arXiv:2103.08035.*
16. **Paul, S.**, Nath, S., Warren, K., (2022). Network Influence with Latent Homophily and Measurement Error. *Submitted. Preprint at arXiv: 2203.14223*
17. Wang S.S.*, **Paul, S.**, (2022). Modeling network and item responses with correlated latent variables. *Submitted.*
18. **Paul, S.**, Milenkovic, O., Chen, Y. (2018). Higher-Order Spectral Clustering under Superimposed Stochastic Block Model. *Submitted. Preprint at arXiv:1812.06515.*
19. **Paul, S.**, Chen, Y. (2016). Orthogonal symmetric non-negative matrix factorization under the stochastic block model. *Submitted. Preprint at arXiv:1605.05349.*
20. Zhao, L.*, Soliman, H., Xu, K. S., **Paul, S.**, (2023+). Spectral clustering with dependent excitations for temporal networks. *Submitted.*

Grants

DMS- 1830547 NSF DMS-NGIA grant under the program “Algorithms for Threat Detection” for the project on “Spatio-Temporal Data Analysis with Dynamic Network Models”. **Principal Investigator.** Total award amount in collaborative grant \$200,000. Years active 08/01/2018-07/31/2021.

Awards and Honors

- OSU 2018 The Ohio State University Institute for Teaching and Learning (UITL) Endorsement: Foundation, Impact, Transformation (FIT).
- JSM 2017 Runner-up award winner of Student Paper Competition for Joint Statistical Meetings 2017 by American Statistical Association’s Imaging Section.

- Norton 2016 Recipient of Norton Prize for Outstanding Doctoral Dissertation, Department of Statistics, University of Illinois at Urbana-Champaign.
- JSM 2015 Winner of Student Paper Competition for Joint Statistical Meetings 2015 by American Statistical Association's section on Statistical Learning and Data Mining.
- IISA 2013 Best Student Paper in Theory and Methods Award at the International Indian Statistical Association Conference 2013.
- IISA 2015 Student Paper Competition finalist in Theory and Methods at the International Indian Statistical Association Conference 2015.
- 2009-2012 Scholarship for Higher Education (INSPIRE) by Department of Science and Technology, Government of India.
- 2007-2008 Jagadish Bose National Science Talent Search (JBNSTS) Fellowship Award.

Research Interests

Statistical inference in networks, Multi-layer and dynamic networks, Matrix factorization, Spatiotemporal data, Neuroimaging data analysis, Statistical machine learning, Data science,

Teaching Experience

- Endorsement **University Institute for Teaching and Learning (UITL) Endorsement: Foundation, Impact, Transformation (FIT), OSU.**
Special credential awarded to individuals across Ohio State to acknowledge their dedicated and substantial effort in continued professional learning in instructional development. This endorsement represents in-depth, sustained, and recognized approaches to pedagogical improvement and excellence.
- AU 21, AU 20 **Advanced Statistical Theory I (STAT 7301), Faculty Instructor, OSU.**
Graduate course offered to Statistics and Biostatistics PhD students as a required course in their curriculum.
- SP 18, SP 19, **Applied Regression Analysis (STAT 6450), Faculty Instructor, OSU.**
AU 19, SP 20, Graduate course offered to Statistics MAS students as well graduate students from diverse departments.
AU 20, SP 21,
SP 22
- AU 17, AU **Introduction to Probability for Data Analytics (STAT 3201), Faculty Instructor OSU.**
18, SP 22 Undergraduate course offered to students pursuing Major and Minor in Data Analytics.
SP 20 **Advanced Graduate Topic Course on Statistical Inference in Networks Data (STAT 8810), Faculty Instructor, OSU.**
Graduate course offered to Statistics PhD students as well PhD students from diverse departments.
- Fall 2013 **Statistics (STAT 100), Graduate Instructor, UIUC.**
Featured in CITES teaching and learning with technology blog ([Link](#)).
- Spring 2013 **Statistics and Probability I (STAT 400), Graduate Discussion Leader, UIUC.**
- SP 15, SP 16, **Big Data Analysis Foundations (STAT 430), Data Science Foundations (STAT 480), Advanced Data Analysis (STAT 448), Applied Bayesian Statistics (STAT 430),**
F 16, SP14, F **Multivariate Statistics (STAT 571), Graduate Teaching Assistant, UIUC.**
15, F 14, Teaching assistant for various courses at undergraduate and graduate level

Student Advising

o PhD students (completed):

- Lingfei Zhao, PhD in Statistics, now Research Scientist at Meta.
- Prateek Sasan, PhD in Statistics (co-advised), now Data Scientist at JP Morgan Chase. Prateek received the Whitney award for research from the Department of Statistics in 2022.
- Selena Shuo Wang, PhD in Psychology (co-advised) and MS in Statistics, now Postdoctoral Scholar in

Biostatistics at Yale University.

- **PhD students (ongoing):** Olivia Cleymaet, Kartik Lovekar
- **PhD committee member (ongoing and completed):** Amartya Ghosh, Xiaohan Fu, Matthew Wascher, Wenna Xi, Cory Shain.

Presentations

- *Invited talk at Econometrics and Statistics (EcoSta) Virtual conference*, Tokyo, Japan, June 2022.
- Topic-Contributed Session sponsored by Section on Statistics in Defense and National Security at the Joint Statistical Meetings, August 2021.
- *Invited talk at CMStatistics Virtual conference*, London, UK, December 2021.
- *University of Pittsburgh Department of Statistics Seminar*, Pittsburgh, PA, October 2021.
- *Invited talk at CMStatistics Virtual conference*, London, UK, December 2020.
- *NSF ATD virtual workshop*, Washington DC, October 2020.
- *Invited talk at International Indian Statistical Association Conference (IISA-2019)*, Mumbai, India, December 2019.
- *NSF ATD + AMPS workshop*, Washington DC, October 2019.
- *Invited talk at Annual Conference of the Animal Behavior Society (ABS 2019)*, Chicago, IL, July 2019.
- *Session organizer and invited speaker at IEEE DSW 2019–Data Science Workshop*, Minneapolis, MN, June 2019.
- *Invited talk at CMStatistics conference*, Pisa, Italy, December 2018.
- *MBI Workshop on modeling and analysis of dynamic networks*, Columbus, Ohio, November 2018
- *Invited talk at AMS Spring Southeastern Sectional Meeting*, Nashville, TN, April, 2018
- *Invited talk at Workshop on Network and Graphical Statistics, ISI*, Kolkata, India, January 2018.
- *Invited talk at International Indian Statistical Association Conference (IISA 2017)*, Hyderabad, India, December 2017.
- *Invited talk at CMStatistics 2017*, London, UK, December 2017.
- *Invited seminar talk at University of Toledo*, Toledo, OH, October 2017.
- *NetSci 2017, poster presentation*, Indianapolis, IN, June 2017.
- *Joint Statistical Meetings*, Chicago, IL, August 2017.
- *Norton Lecture at Bohrer Workshop*, Urbana-Champaign, IL, November 2016.
- *Joint Statistical Meetings*, Chicago, IL, August 2016.
- *International Indian Statistical Association Conference*, Pune, India, December 2015.
- *Joint Statistical Meetings*, Seattle, WA, August 2015.
- *Statistics for Complex System Conference (Poster)*, Madison, WI, June 2015.
- *International Indian Statistical Association Conference*, Chennai, India, January 2013.

Referees for Journals

- The Annals of Statistics (4)
- Journal of the American Statistical Association (3)
- Journal of Royal Statistical Society - Series B (1)
- Biometrika (2)
- Bernoulli (1)

- Journal of Machine Learning Research (1)
- Electronic Journal of Statistics (2)
- Technometrics (3)
- Statistica Sinica (1)
- Journal of Computational and Graphical Statistics (1)
- Annals of Applied Statistics (1)
- Bayesian Analysis (1)
- Computational Statistics and Data Analysis (2)
- Biometrics (1)
- Statistics and Computing (1)
- Journal of Business and Economic Statistics (1)
- Psychometrika (1)
- Network Science (1)
- Sankhya (2)
- Multivariate Behavioral Research (1)
- Statistical Modelling (1)
- Metrika (1)
- Psychiatry Research: Neuroimaging (1)
- Computational Brain and Behavior (1)
- Journal of Selected Topics in Signal Processing (1)

Service and Activities

- Department service – **Graduate admissions committee (2018-2022)**, **Faculty Search Committee 2021**, Ph.D. qualifying exam committee member (2018, 2021), MAS final exam committee member (2017, 2019, 2020).
- TDAI service - Organizing committee member for TDAI speaker series, 2020-2021, and Judge for TDAI fall forum poster session in 2021-2022.
- Member of **TDAI Communities of practice** on Foundations of Data Science and AI, Computational Social Sciences, and Computational Health and Life Sciences.
- Judge for ASA Datafest event hosted by Data Analytics program at OSU in 2018 and 2019.
- **Invited Session Organizer** at CMStatistics 2020 virtual conference, IEEE Data Science workshop 2019, and IISA 2017 Conference.
- Chair of the Graduate Student Invited Seminar committee at the Department of Statistics, UIUC, 2016-2017.
- Former member of Statistics for Community (Statcom), a pro bono statistical consulting group by graduate students at UIUC.
- "Freedom of the hall" trophy for extraordinary leadership and (non-academic) achievement by an outgoing student, LLR hall, IIT Kharagpur, 2012.