

Satyaki Sikdar

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Research Interests

Network Science · Science of Science · Social and Information Networks · Machine Learning

Education

University of Notre Dame **Notre Dame, IN**
Ph.D. in Computer Science & Engineering *2017 – 2022*

Adviser: Tim Weninger

Thesis: Scalable and Interpretable Graph Modeling with Graph Grammars

Committee: David Chiang, Peter Kogge, and Danai Koutra

Heritage Institute of Technology **Kolkata, India**
B.Tech. in Computer Science & Engineering *2013 – 2017*

Advisers: Partha Basuchowdhuri and Subhashis Majumder

Thesis: Learning Models for Influence Maximization

Work Experience

Loyola University Chicago **Chicago, IL**
Assistant Professor (tenure-track), Computer Science Department *Aug 2024 –*

Indiana University **Bloomington, IN**
Postdoctoral Fellow with Santo Fortunato, Luddy School of Informatics *Jan 2022 – Jul 2024*

University of Notre Dame **Notre Dame, IN**
Instructor of Record *Fall 2021, Spring 2021*
Graduate Research Assistant with Tim Weninger *May 2018 – Dec 2021*
Graduate Teaching Assistant *Aug 2017 – May 2018*

Snap Inc. **Remote**
Research Intern, Computational Social Science Team *May – Aug 2020*

Heritage Institute of Technology **Kolkata, India**
Undergraduate Researcher with Partha Basuchowdhuri and Subhashis Majumder *Apr 2015 – Jul 2017*

Honors and Awards

Teaching Award: Outstanding Graduate Student Instructor Award 2022

Student Award: Best Student Award for Academic Excellence – Class of 2017

Travel Awards: ACM WSDM 2022 · ACM IKDD Conference on Data Science 2016

Courses Taught

(† online)

Loyola University Chicago	Chicago, IL
COMP 306/406 Data Mining	Spring 2025
Class size: 34. Overall Course Effectiveness median score: 5 / 5.	
COMP 388/488 Network Science†	Spring 2025
Class size: 15. Overall Course Effectiveness median score: 4.85 / 5.	
COMP 306/406 Data Mining†	Fall 2024
Class size: 29. Overall Course Effectiveness median score: 4.5 / 5.	
COMP 141 Introduction to Computing Tools and Techniques†	Fall 2024
Class size: 28. Overall Course Effectiveness median score: 4 / 5.	
Network Science Society	
Co-instructor for A Short First Course in Network Science†	Summer 2024
A two-week online course co-taught with Santo Fortunato	
University of Notre Dame	Notre Dame, IN
CSE 30151 Theory of Computing	Fall 2021
Class size: 91. Composite median score: 4.7 / 5.	
CSE 20110 Discrete Mathematics	Spring 2021
Class size: 50. Composite median score: 3.7 / 5.	

Publications

(* equal contribution AR acceptance rate IF impact factor)

Journal Articles.....

- [J5] **S. Sikdar***, S. Venturini*, M. L. Charpignon, S. Kumar, F. Rinaldi, F. Tudisco, S. Fortunato, and M. S. Majumder, "What we should learn from pandemic publishing," *Nature Human Behaviour (comment)*, 2024.
- [J4] **S. Sikdar***, S. Venturini*, F. Rinaldi, F. Tudisco, and S. Fortunato, "Collaboration and topic switches in science," *Scientific Reports*, 2024, [IF:4.6].
- [J3] Ş. Erkol, **S. Sikdar**, F. Radicchi, and S. Fortunato, "Consistency Pays off in Science," *Quantitative Science Studies (QSS)*, 2023.
- [J2] **S. Sikdar**, D. G. Cedre, T. W. Ford, and T. Weninger, "The Infinity Mirror Test for Graph Models," *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, 2022, [IF:8.9].
- [J1] P. Basuchowdhuri, **S. Sikdar**, V. Nagarajan, K. Mishra, S. Gupta, and S. Majumder, "Fast Detection of Community Structures using Graph Traversal in Social Networks," *Knowledge and Information Systems (KAIS)*, 2018, [IF:2.7].

Conference Papers.....

- [C6] **S. Sikdar**, N. Shah, and T. Weninger, "Attributed Graph Modeling with Vertex Replacement Grammars," *ACM International Conference on Web Search and Data Mining (WSDM)*, 2022, [AR:18%].
- [C5] J. I. Hibshman, D. G. Cedre, **S. Sikdar**, and T. Weninger, "Joint Subgraph-to-Subgraph Transitions: Generalizing Triadic Closure for Powerful and Interpretable Graph Modeling," *ACM International Conference on Web Search and Data Mining (WSDM)*, 2021, [AR:18%].
- [C4] J. I. Hibshman, **S. Sikdar**, and T. Weninger, "Towards Interpretable Graph Modeling with Vertex Replacement Grammars," *IEEE International Conference on Big Data (BigData)*, 2019, [AR:19%].
- [C3] **S. Sikdar**, J. Hibshman, and T. Weninger, "Modeling Graphs with Vertex Replacement Grammars," *IEEE International Conference on Data Mining (ICDM)*, 2019, [AR:9%].
- [C2] C. Pennycuff, **S. Sikdar**, C. Vajiac, D. Chiang, and T. Weninger, "Synchronous Hyperedge Replacement Graph Grammars," *International Conference on Graph Transformation (ICGT)*, 2018.

- [C1] P. Basuchowdhuri, **S. Sikdar**, S. Shreshtha, and S. Majumder, "*Detecting Community Structures in Social Networks by Graph Sparsification*," *ACM IKDD Conference on Data Science (CODS)*, 2016, [AR:5%].

Peer-reviewed Abstracts.....

- [A7] S. Venturini, **S. Sikdar**, M. Mazzarello, F. Rinaldi, F. Tudisco, P. Santo, S. Fortunato, and C. Ratti, "*The Effect of Colocation on Paper Coauthorships during COVID-19*," International Conference on Network Science (NetSci), Contributed Talk, 2024.
- [A6] S. Venturini, **S. Sikdar**, M. Mazzarello, F. Rinaldi, F. Tudisco, P. Santo, S. Fortunato, and C. Ratti, "*The Effect of Colocation on Paper Coauthorships during COVID-19*," International Conference on Science of Science and Innovation (ICSSI), Poster, 2024.
- [A5] **S. Sikdar***, S. Venturini*, M. L. Charpignon, S. Kumar, F. Rinaldi, F. Tudisco, S. Fortunato, and M. S. Majumder, "*The COVID-19 Research Outbreak: How the Pandemic Culminated in a Surge of New Researchers*," International Conference on Computational Social Science (IC²S²), Contributed Talk, 2023, [AR:31%].
- [A4] **S. Sikdar***, S. Venturini*, M. L. Charpignon, S. Kumar, F. Rinaldi, F. Tudisco, S. Fortunato, and M. S. Majumder, "*The COVID-19 Research Outbreak: How the Pandemic Culminated in a Surge of New Researchers*," International Conference on Science of Science and Innovation (ICSSI), Contributed Talk, 2023.
- [A3] **S. Sikdar***, S. Venturini*, F. Rinaldi, F. Tudisco, and S. Fortunato, "*Collaboration and Topic Switches in Science*," International Conference on Computational Social Science (IC²S²), Plenary Talk, 2023, [AR:1.75%].
- [A2] **S. Sikdar***, S. Venturini*, F. Rinaldi, F. Tudisco, and S. Fortunato, "*Collaboration and Topic Switches in Science*," International Conference on Science of Science and Innovation (ICSSI), Contributed Talk, 2023.
- [A1] **S. Sikdar***, S. Venturini*, F. Rinaldi, F. Tudisco, and S. Fortunato, "*Collaboration and Topic Switches in Science*," International Conference on Network Science (NetSci), Contributed Talk, 2023.

Contributed Chapters.....

- [R2] **S. Sikdar**, "*NetworkX Graph Library*," *A Survey of Graph Processing Paradigms*, P. M. Kogge, Ed., University of Notre Dame, 2019. DOI: 10.7274/10-z6dc-9c71.
- [R1] **S. Sikdar**, "*Spectral Community Detection*," *A Survey of Graph Kernels*, P. M. Kogge, Ed., University of Notre Dame, 2019. DOI: 10.7274/10-e7wb-da60.

Under Review.....

- [P2] **S. Sikdar***, A. Ghavasieh*, M. De Domenico, and S. Fortunato, *Functional Mesoscale Organization of Complex Networks*, arXiv:2508.04562, 2025.
- [P1] S. Venturini, **S. Sikdar**, M. Mazzarello, F. Rinaldi, F. Tudisco, P. Santi, S. Fortunato, and C. Ratti, *The Effects of Remote Working on Scientific Collaboration and Impact*, arXiv:2511.18481, 2025.

Presentations




(* virtual talk)

Invited Talks





Federal University of Ouro Preto, Ouro Preto, Brazil*	Nov 2025
12 th Greater Chicago Area Systems Research Workshop, Chicago, IL	May 2025
Vidyasagar College, Kolkata, India	Jan 2025
Loyola University Chicago, Chicago, IL	Nov 2024, Mar 2024

University of Minnesota, Duluth, MN	Feb 2024
University of Dayton, Dayton, OH	Feb 2024
DePaul University, Chicago, IL	Feb 2024
Heritage Institute of Technology, Kolkata, India	Sep 2022
Indian Association for the Cultivation of Science, Kolkata, India	Sep 2022
University of Louisville, Louisville, KY	Mar 2022
Lawrence Livermore National Laboratory, Livermore, CA*	Apr 2021
University of Illinois, Urbana, IL*	Apr 2021
Missouri State University, Springfield, MO*	Feb 2021
South Dakota State University, Brookings, SD*	Dec 2020
Indian Association for the Cultivation of Science, Kolkata, India	Oct 2019
Vidyasagar College, Kolkata, India	Jan 2016

Posters

<i>Cyberbullying Networks: Analyzing User Roles and Interactions on Instagram.</i> GCASR 2025	May 2025
<i>The Effect of Colocation on Paper Coauthorships during COVID-19.</i> ICSSI 2024	July 2024
<i>Consistency Pays off in Science.</i> ICSSI 2023	June 2023
<i>The Infinity Mirror Test for Graph Generators.</i> SIAM NS 2020 	July 2020
<i>Modeling Graphs with Vertex Replacement Grammars.</i> SIAM NS 2019, NetSci 2019 	May 2019
<i>Synchronous Hyperedge Replacement Graph Grammars.</i> MSLD 2018 	May 2018

Other Talks

<i>Introduction to Support Vector Machines</i> 	Apr 2017
<i>Density Based Spatial Clustering of Applications with Noise</i> 	Feb 2017
<i>Introduction to Decision Trees</i> 	Nov 2016
<i>A Friendly Introduction to Random Networks</i> 	Feb 2016

Service

Organizing Committee Member. Networks in Science of Science Workshop @ NetSci 2025

Program Committee Member.

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|---------------------------------|----------------------------------|--------------------------|
| - Complex Networks 2025 | - SDM 2025, 2024, 2023, 2022 | - ISSI 2023 |
| - IEEE ICDM 2025 | - WSDM 2025, 2024 | - BigData 2025,2024,2019 |
| - PAKDD 2025, 2024 | - ICWSM 2025,2024,2023,2022,2020 | |
| - The Web Conference 2025, 2024 | - CIKM 2025,2024,2023,2022,2021 | - WISE 2019 |

Journal Reviewer.

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|---|---|
| - Quantitative Science Studies | Engineering (TKDE) |
| - Scientometrics | - Journal of Combinatorial Optimization |
| - EPJ Data Science | - Physical Review E |
| - IEEE Transactions on Knowledge and Data | - Physical Review Materials |

- PLOS ONE
- ACM Transactions on Data Science (TDS)
- Data Mining and Knowledge Discovery (DMKD)
- International Journal Cooperative Information Systems (IJCIS)
- Journal of Logic & Computation

External Reviewer (multiple times). IEEE ICDM, CIKM, The Web Conference, WSDM, KDD, AAAI

International Committee Leader. Postdoc Association Indiana University Bloomington 2022 – 2024

Volunteer. The Scoop from Grad Students Dec 2019

Panelist. Preparing a Grad School Application Dec 2019

Member. Notre Dame CSE Graduate Student Board 2019 – 2020

Volunteer Judge. Northern Indiana Regional Science & Engineering Fair 2019, 2020

Chair, Vice Chair, Secretary. Heritage Institute of Technology ACM Student Chapter 2014 – 2017

Students Mentored & Supervised

(@ indicates co-authorship in papers)

Thesis Advisor

Izzy Moore. Ph.D. student, LUC May 2025 –

Juan Rosendo. M.S. student, LUC (co-supervised with Yasin Silva) Aug 2025 –

Research Mentor

Taylor Hales. M.S. student, LUC May 2025 –

Chloe Kilroy. B.S. student, LUC Jan 2025 –

Tyler Rosario. M.S. student, LUC Aug 2024 – May 2025

Manuel Sandoval Madrigal. Ph.D. student, LUC Aug 2024 –

Andrew Claros. Ph.D. student, IU Aug 2023 –

Marie-Laure Charpignon[@]. Ph.D. student, MIT Aug 2022 –

Sagar Kumar[@]. Ph.D. student, Northeastern Aug 2022 –

Arsham Ghavasieh[@]. Ph.D. student, University of Trento, Italy (now Postdoc at IU) Aug 2022 –

Şirag Erkol[@]. Ph.D. student, IU (now Postdoc at Northwestern) Feb – Aug 2022

Daniel Kaiser. Ph.D. student, IU Feb – Aug 2022

Sara Venturini[@]. Ph.D. student, University of Padova, Italy (now Postdoc at Northeastern) Jan 2022 –

Manita Pote. Ph.D. student, IU Jan – May 2022

Daniel Gonzalez Cedre[@]. Ph.D. student, ND Dec 2019 – Aug 2020

Catalina Vajiac[@]. B.S. student, ND (now Ph.D. student at CMU) Jan – Jul 2019

Justus Hibshman[@]. Ph.D. student, ND Sep – Dec 2018

Computer Skills

Advanced: Python, NetworkX, Matplotlib, Seaborn, Jupyter, \LaTeX

Intermediate: C++, Boost Graph Library, Pandas, SQL, shell scripting

Relevant Coursework

Scalable Graph Algorithms · Web Science & Information Retrieval · Exotic Computing · Social Networks Complexity & Algorithms · Pedagogy and Practice in the College Classroom

References

- Tim Weninger 574-631-6770
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 University of Notre Dame
- Santo Fortunato 812-856-5754
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 APS Fellow, Network Science Society Fellow
 Luddy School of Informatics, Computing, and Engineering
 Indiana University Bloomington
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 Ted H. McCourtney Professor of Computer Science & Engineering kogge@nd.edu
 IBM Fellow, IEEE Fellow, AAAS Fellow
 University of Notre Dame
- Maimuna S. Majumder 617-355-6000
 Assistant Professor maimuma.majumder@childrens.harvard.edu
 Peter Szolovits Distinguished Scholar
 Computational Health Informatics Program
 Harvard Medical School & Boston Children's Hospital