

# Satyaki Sikdar

211 Doyle Center – 1052 W Loyola Ave – Chicago, IL 60626  
 ☎ 574-339-2898 • ✉ ssikdar@luc.edu • 🌐 satyaki.net  
 🆔 0000-0003-1669-6594 • 🔑 2f6t6hYAAAAJ • 🌐 satyakisikdar

## 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)

<b>Loyola University Chicago</b>	<b>Chicago, IL</b>
COMP 306/406 Data Mining	Spring 2025
Class size: 34.	
COMP 388/488 Network Science†	Spring 2025
Class size: 15.	
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.	
<b>Network Science Society</b>	
Co-instructor for A Short First Course in Network Science†	Summer 2024
A two-week online course co-taught with Santo Fortunato	
<b>University of Notre Dame</b>	<b>Notre Dame, IN</b>
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.....

- [J4] **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.
- [J3] **S. Sikdar\***, S. Venturini\*, F. Rinaldi, F. Tudisco, and S. Fortunato, "Collaboration and topic switches in science," *Scientific Reports*, 2024, [IF:4.6].
- [J2] **S. Sikdar**, D. G. Cedre, T. W. Ford, and T. Wenginger, "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. Wenginger, "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. Wenginger, "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. Wenginger, "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. Wenginger, "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. Wenginger, "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 (IC<sup>2</sup>S<sup>2</sup>), 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 (IC<sup>2</sup>S<sup>2</sup>), 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/r0-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/r0-e7wb-da60.

**Under Preparation**.....

- [P1] **S. Sikdar\***, A. Ghavasieh\*, M. De Domenico, and S. Fortunato, "*Persistent Energy Localization Determines the Mesoscale Functional Organization of Complex Networks*," Forthcoming, 2024.

**Presentations**




(\* virtual talk)

**Invited Talks**





Vidyasagar College, Kolkata, India	Jan 2025
Loyola University Chicago, Chicago, IL	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>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.*

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

*Journal Reviewer.*

- Quantitative Science Studies
- PLOS ONE
- Scientometrics
- ACM Transactions on Data Science (TDS)
- EPJ Data Science
- Data Mining and Knowledge Discovery (DMKD)
- IEEE Transactions on Knowledge and Data Engineering (TKDE)
- International Journal Cooperative Information Systems (IJCIS)
- Journal of Combinatorial Optimization
- Journal of Logic & Computation
- Physical Review E
- Physical Review Materials

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

*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)

<i>Chloe Kilroy</i> . B.S. student, LUC	Jan 2025 –
<i>Tyler Rosario</i> . M.S. student, LUC	Aug 2024 –
<i>Manuel Sandoval Madrigal</i> . Ph.D. student, LUC	Aug 2024 –
<i>Andrew Claros</i> . Ph.D. student, IU	Aug 2023 –
<i>Marie-Laure Charpignon</i> <sup>@</sup> . Ph.D. student, MIT	Aug 2022 –
<i>Sagar Kumar</i> <sup>@</sup> . Ph.D. student, Northeastern	Aug 2022 –
<i>Arsham Ghavasieh</i> <sup>@</sup> . Ph.D. student, University of Trento, Italy (now a Postdoc at IU)	Aug 2022 –
<i>Şirag Erkol</i> <sup>@</sup> . Ph.D. student, IU (now a Postdoc at Northwestern)	Feb – Aug 2022
<i>Daniel Kaiser</i> . Ph.D. student, IU	Feb – Aug 2022
<i>Sara Venturini</i> <sup>@</sup> . Ph.D. student, University of Padova, Italy (now a Postdoc at Northeastern)	Jan 2022 –
<i>Manita Pote</i> . Ph.D. student, IU	Jan – May 2022
<i>Daniel Gonzalez Cedre</i> <sup>@</sup> . Ph.D. student, ND	Dec 2019 – Aug 2020
<i>Catalina Vajiac</i> <sup>@</sup> . B.S. student, ND (now a Ph.D. student at CMU)	Jan – Jul 2019
<i>Justus Hibshman</i> <sup>@</sup> . 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
Frank M. Freimann Collegiate Associate Professor of Engineering Department of Computer Science & Engineering University of Notre Dame	tweninger@nd.edu
Santo Fortunato	812-856-5754
Professor APS Fellow, Network Science Society Fellow Luddy School of Informatics, Computing, and Engineering Indiana University Bloomington	santo@iu.edu
Peter M. Kogge	574-631-6763
Ted H. McCourtney Professor of Computer Science & Engineering IBM Fellow, IEEE Fellow, AAAS Fellow University of Notre Dame	kogge@nd.edu

Maimuna S. Majumder

617-355-6000

Assistant Professor

[maimuma.majumder@childrens.harvard.edu](mailto:maimuma.majumder@childrens.harvard.edu)

Peter Szolovits Distinguished Scholar

Computational Health Informatics Program

Harvard Medical School & Boston Children's Hospital