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), Department of Computer Science — *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, University of Notre Dame, 2022
Student Award: Best Student Award for Academic Excellence – Class of 2017
Selected Participant: NSF SaTC Aspiring PI Workshop, Washington, DC, Oct 2026
Travel Awards: ACM WSDM 2022 · ACM IKDD Conference on Data Science 2016

Grant Proposals

NSF Secure and Trustworthy Cyberspace (SaTC)

Proposal in preparation — *Target Jan 2027*

Role: Lead PI. Co-PIs: Yasin N. Silva (Loyola) and Deborah L. Hall (Arizona State University).

Amazon Research

Proactive Cyberbullying Detection using LLM Agents — *May 2026*

Role: PI. Co-PI: Yasin N. Silva (Loyola).

Requested: $78,000 plus $35,000 in AWS credits. Not funded.

Courses Taught

(† online)

Loyola University Chicago — ***Chicago, IL***

Course	Term	Undergrad	Grad	Responses	Mean
COMP 306/406 Data Mining	Spring 2026	12	12	10	3.90
	Fall 2025	–	11	8	4.13
	Spring 2025	20	14	29	4.59
	Fall 2024†	12	16	14	4.50
COMP 271/400-B Data Structures I	Fall 2026	17	2	–	pending
	Fall 2025	17	4	10	3.90
HONR 204 Science & Society: Network Science	Fall 2026	24	–	–	pending
	Spring 2026	25	–	14	4.50
COMP 388/488 Special Topics: Network Science	Spring 2025†	7	9	7	4.43
COMP 141 Intro. to Computing Tools and Techniques	Fall 2024†	29	–	14	4.07

Mean: SmartEvals overall course effectiveness (out of 5), all responses, cross-listed sections combined.

University of Notre Dame — ***Notre Dame, IN***

Course	Term	Undergrad	Grad	Responses	Median
CSE 30151 Theory of Computing	Fall 2021	91	–	74	4.70
CSE 20110 Discrete Mathematics	Spring 2021	50	–	45	3.70

Median: Notre Dame composite score, out of 5 (a different survey; not comparable to Loyola means).

Network Science Society — ***Online***

Co-instructor with Santo Fortunato, *A Short First Course in Network Science* (two weeks) — Summer 2024

Students Mentored & Supervised

(@ indicates co-authorship in papers)

Thesis Advisor

Sam Kramer. Ph.D. student, LUC (co-supervised with Yasin Silva) — Fall 2026 –

Izzy Moore. Ph.D. student, LUC — Mar 2025 –

Juan J. Rosendo[@]. M.S. student, LUC (co-supervised with Yasin Silva) — Aug 2025 –

Research Mentor

Arianna Gonzalez Barciona. B.S. student (Neuroscience), LUC	Apr 2026 –
Ivan Madriz Pizarro. B.S. student, LUC (independent study)	Apr 2026 – Aug 2026
Mariano Garcia Melo. B.S. student, LUC (independent study)	Jan 2026 – May 2026
Dawson Gallay. M.S. student, LUC	Jan 2026 –
Meredith Sauer. M.A. student (Digital Humanities), LUC	Jan 2026 – Aug 2026
Ayra Aftab. M.S. student, LUC	Nov 2025 – May 2026
Maddie Juarez[@]. B.S. student, LUC (co-supervised with Yasin Silva)	May 2025 – May 2026
Taylor Hales[@]. M.S. student, LUC (co-supervised with Yasin Silva)	May 2025 – Dec 2025
Chloe Kilroy[@]. B.S. student, LUC (co-supervised with Yasin Silva)	Jan 2025 – May 2026
Chidera Anyamele. B.S. student, LUC (independent study)	Jan 2025 – May 2025
Tyler Rosario[@]. M.S. student, LUC (co-supervised with Yasin Silva)	Sep 2024 – May 2025
Manuel Sandoval Madrigal[@]. Ph.D. student, LUC (BullyBlocker project)	Aug 2024 –

Before Loyola

Andrew Claros. Ph.D. student, IU	Aug 2023 – Dec 2025
Marie-Laure Charpignon[@]. Ph.D. student, MIT	Aug 2022 – Dec 2024
Sagar Kumar[@]. Ph.D. student, Northeastern	Aug 2022 – Dec 2024
Arsham Ghavasieh[@]. Ph.D. student, University of Trento, Italy (now Postdoc at IU)	Aug 2022 – Dec 2024
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, U. Padova, Italy (now Postdoc at Northeastern)	Jan 2022 – Dec 2024
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

Publications

§ Since joining Loyola (Aug 2024). Underlined: Loyola student co-author. * Equal contribution; on these papers the candidate is listed first, and the published order may differ. AR: acceptance rate.

Journal Articles

[J6] §**S. Sikdar***, A. Ghavasieh*, M. De Domenico, and S. Fortunato, "*Thermodynamic Characterization of Mesoscale Organization via Network Density Matrices*," *Physical Review E*, 2026, [Accepted Sep 2026].

[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)*, vol. 8, no. 9, pp. 1631–1634, 2024.

[J4] **S. Sikdar***, S. Venturini*, F. Rinaldi, F. Tudisco, and S. Fortunato, "*Collaboration and Topic Switches in Science*," *Scientific Reports*, vol. 14, 2024, Art. no. 1258.

[J3] Ş. Erkol, **S. Sikdar**, F. Radicchi, and S. Fortunato, "*Consistency Pays Off in Science*," *Quantitative Science Studies (QSS)*, vol. 4, no. 2, pp. 491–500, 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)*, vol. 35, no. 4, pp. 4281–4292, 2023.

[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)*, vol. 59, no. 1, pp. 1–31, 2019.

Peer-reviewed Conference and Workshop Papers

[C7] §**S. Sikdar**, M. Sandoval, T. Hales, C. Kilroy, M. Juarez, T. Rosario, J. J. Rosendo, D. L. Hall, and Y. N. Silva, "*Network Analysis of Cyberbullying Interactions on Instagram*," *International Workshop on Cyber Social Threats (CySoc) at ICWSM*, 2026.

[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, pp. 928–936, [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, pp. 815–823, [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, pp. 770–779, [AR:19%].

[C3] **S. Sikdar**, J. Hibshman, and T. Weninger, "*Modeling Graphs with Vertex Replacement Grammars*," *IEEE International Conference on Data Mining (ICDM)*, 2019, pp. 558–567, [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, pp. 20–36.

[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, pp. 1–9, [AR:5%].

Peer-reviewed Abstracts

IC^2S^2: International Conference on Computational Social Science. ICSSI: International Conference on the Science of Science and Innovation. NetSci: International Conference on Network Science.

[A4] §**S. Sikdar**, M. Sandoval, T. Hales, C. Kilroy, M. Juarez, T. Rosario, J. J. Rosendo, D. L. Hall, and Y. N. Silva, "*Cyberbullying Interaction Networks on Instagram*," Contributed talks, IC^2S^2 and NetSci, 2026.

[A3] S. Venturini, **S. Sikdar**, M. Mazzarello, F. Rinaldi, F. Tudisco, P. Santi, S. Fortunato, and C. Ratti, "*The Effect of Colocation on Paper Coauthorships during COVID-19*," Poster, ICSSI; contributed talk, NetSci, 2024.

[A2] **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*," Contributed talks, IC^2S^2 [AR:31%] and ICSSI, 2023.

[A1] **S. Sikdar***, S. Venturini*, F. Rinaldi, F. Tudisco, and S. Fortunato, "*Collaboration and Topic Switches in Science*," Plenary talk, IC^2S^2 [AR:1.75%]; contributed talks, ICSSI and NetSci, 2023.

Technical Reports

[R2] **S. Sikdar**, "*NetworkX Graph Library*," *A Survey of Graph Processing Paradigms*, P. M. Kogge, Ed., University of Notre Dame, 2019.

[R1] **S. Sikdar**, "*Spectral Community Detection*," *A Survey of Graph Kernels*, P. M. Kogge, Ed., University of Notre Dame, 2019.

Under Review

[P2] §W. Jeong, D. Marinelli, **S. Sikdar**, G. S. Yadav, and S. Fortunato, "*The Backbone of Science: Analysis of Citation Networks between Papers and Their Sources*," *arXiv:2607.09771*, 2026.

[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

Case Western Reserve University, Cleveland, OH*	Apr 2026
Federal University of Ouro Preto, Ouro Preto, Brazil* (guest lecture)	Nov 2025
12th Greater Chicago Area Systems Research Workshop, Chicago, IL	May 2025
Vidyasagar College, Kolkata, India	Jan 2025
Loyola University Chicago, Chicago, IL (CS seminar)	Nov 2024
Loyola University Chicago, Chicago, IL (job talk)	Mar 2024
University of Minnesota, Duluth, MN (job talk)	Feb 2024
University of Dayton, Dayton, OH (job talk)	Feb 2024
DePaul University, Chicago, IL (job talk)	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

GCASR: Greater Chicago Area Systems Research Workshop. SIAM NS: SIAM Workshop on Network Science. MSLD: Midwest Speech and Language Days.

The Science of Science: Loyola University's Research Network. GCASR 2026 — May 2026

An Investigation of LLM Use in Scientific Papers. GCASR 2026 — May 2026

Cyberbullying Networks: Analyzing User Roles and Interactions on Instagram. GCASR 2025 — May 2025

The Effect of Colocation on Paper Coauthorships during COVID-19. ICSSI 2024 — Jul 2024

Consistency Pays Off in Science. ICSSI 2023 — Jun 2023

The Infinity Mirror Test for Graph Generators. SIAM NS 2020 — Jul 2020

Modeling Graphs with Vertex Replacement Grammars. SIAM NS 2019, NetSci 2019 — May 2019

Synchronous Hyperedge Replacement Graph Grammars. MSLD 2018 — May 2018

Service

Loyola University Chicago

Faculty Lead. Social Committee, Department of Computer Science — Sep 2024 –

Participant. Department of Computer Science Curriculum Retreats — 2025 – 2026

Participant. Undergraduate Open House — Oct 2025

Professional

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

Program Committee Member.
CIKM 2021–2026 · ICIP Workshop 2026 · ICWSM 2020, 2022–2026 · PAKDD 2024–2025
Complex Networks 2025 · IJCNLP-AACL Workshop 2025 · ISSI 2023 · SDM 2022–2026
IEEE BigData 2019, 2024–2026 · IEEE ICDM 2025–2026 · WISE 2019 · WSDM 2024–2025
International Symposium on Complex Systems 2026 · The Web Conference 2024–2025

Journal Reviewer. (§ reviewed since Aug 2024)
Quantitative Science Studies · Scientometrics · EPJ Data Science[§] ·
IEEE Transactions on Knowledge and Data Engineering · Journal of Combinatorial Optimization ·
Physical Review E[§] · Physical Review Materials · PLOS ONE · ACM Transactions on Data Science ·
Data Mining and Knowledge Discovery[§] · ACM Transactions on Knowledge Discovery from Data[§] ·
Journal of Supercomputing[§] · Journal of Computational Social Science[§] ·
International Journal of Cooperative Information Systems · Journal of Logic & Computation

External Reviewer (multiple times). IEEE ICDM, CIKM, The Web Conference, WSDM, KDD, AAAI, International Conference on Applied Algorithms (ICAA)

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