

CV of Sudeshna Sarkar

Name: Sudeshna Sarkar

Date of Birth: 12th September, 1966

Designation: Professor, Department of Computer Science & Engineering, IIT Kharagpur, India.
Head, Centre of Excellence in Artificial Intelligence

Contact Details

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Areas of Interest

Natural Language Processing, Data Mining, Information Retrieval

Education

Degree	Institution	Year	Discipline
Ph.D.	IIT Kharagpur	1996	Computer Science & Engineering
M.S.	University of California, Berkeley	1991	Computer Science
B.Tech.	IIT Kharagpur	1989	Computer Science & Engineering
H.S. (10+2)	South Point High School, Calcutta	1985	
Madhyamik(10)	South Point High School, Calcutta	1983	

Employment

Organization	Designation	From	To
IIT Kharagpur	Professor	April 2007	-
IIT Kharagpur	Associate Professor	June 2002	March 2007
IIT Kharagpur	Assistant Professor	May 1998	June 2002
IIT Kanpur	Assistant Professor	Dec 1997	May 1998
IIT Guwahati	Assistant Professor	Nov 1996	Dec 1997
IIT Guwahati	Lecturer	Feb 1996	Nov 1996

Administrative Positions and Roles

Role	From	To
Head, Centre of Excellence in Artificial Intelligence	April 2018	-
Head, Computer Science and Engineering	April 2016	Mar 2019
Warden, Sarojini Naidu/Indira Gandhi Hall	Nov 2013	Oct 2015
Member, Board of Governors	2018	2019

Teaching

Artificial Intelligence, Machine Learning, Deep Learning, Natural language processing, Information Retrieval, Foundations of Algorithm and Machine Learning, Data Analytics, Foundations of Computing Science, Discrete Mathematics, Programming and Data Structure

Research Activity

My broad topics of interest span different areas of artificial intelligence. My current interests are in natural language processing, data mining and information retrieval.

Projects Undertaken

These are some of the major sponsored projects that I have executed/ ongoing in the past few years.

Current Projects

Project	Sponsor
A Platform for Crosslingual and Multilingual Event Monitoring in Indian languages	MHRD
Effective Drug Repurposing through Literature and Patent Mining, Data Integration and Development of System Pharmacology Platform	MHRD, DST and Excelra Solutions
Integrated Information System and Knowledge Discovery Platform for ONGC	ONGC
National AI Resource Platform: Creating a collateral for supporting popular ML applications on AWS infrastructure	Amazon Web Services
Developing a Computing and Storage Framework around National Digital Library of India (NDLI) resources	MHRD
Artificial Intelligence in Process Plants	TCG Foundations
AI in Retail	Capillary Technologies Pte Ltd
Review Mining and Recommendation	Flipkart
Creation of Bengali Dependnecy Treebank	Google

Some Past Projects

Artificial Intelligence for Societal Needs, Application of Artificial Intelligence and Machine Learning to various area related to Transportation, Logistics, Climate Modeling and Prediction, etc.	MHRD
Development of National Digital Library (NDL) of India - Towards Building a National Asset	MHRD
Cross Language Information Access Portal for Indian Languages	MEITY
Indian Language to Indian Language Machine Translation System (ILMT)	MEITY
Group Dymanics of Mobile Users	Xerox Corporation
Creating a Treebank for Bengali sentences and training a Bengali parser	Central Institute of Indian Languages, Mysore
Minekey – personalized content recommendations	Minekey Inc.
Named Entity Recognition, Part of Speech tagging, G2P of Hindi	Microsoft Research India

Publications

Journals

1. Santa Maiti, Stephan Winter, L. Kulik and Sudeshna Sarkar, "The Impact of Flexible Platoon Formation Operations", in IEEE Transactions on Intelligent Vehicles. 2020
2. Ayan Das , Sudeshna Sarkar, "Transform, Combine, and Transfer: Delexicalized Transfer Parser for Low-resource Languages". in ACM Transactions on Asian and Low-Resource Language Information Processing (TALLIP): Volume 19 Issue 1, pp 4:1--4:30; Jan 2020
3. , "Using Communities of Words Derived from Multilingual Word Vectors for Cross-Language Information Retrieval in Indian Languages". ACM Transactions on Asian and Low-Resource Language Information Processing (TALLIP). 2019 Jan 8;18(1):1.
4. Paheli Bhattacharya, Pawan Goyal, and Sudeshna Sarkar , "Using Word Embeddings for Query Translation for Hindi to English Cross Language Information Retrieval" by, Computación y Sistemas, 20 Page: 435-447 (2016)

5. Maunendra Sankar Desarkar, Sudeshna Sarkar, Pabitra Mitra, "Preference Relations Based Unsupervised Rank Aggregation for Metasearch", Expert Systems with Applications Volume 49, 1 May 2016, Pages 86–98
6. Rajendra Prasath, Vijai Kumar, Sudeshna Sarkar, "Assisting web document retrieval with topic identification in tourism domain", in Web Intelligence, Volume 13, Issue 1, Pages 31-41, IOS Press
7. Sanjay Chatterji; Tanaya Mukherjee Sarkar; Pragati Dhang; Samhita Deb; Sudeshna Sarkar; Jayshree Chakraborty; Anupam Basu, "A Dependency Annotation Scheme For Bangla Tree-bank", in Language Resources and Evaluation, Springer., Mar 2014, pages 1—35.
8. Pragati Dhang, Sanjay Chatterji, Tanaya Mukherjee Sarkar, Sudeshna Sarkar, Jayashree Chakraborty, Anupam Basu, "Syntactico- semantic subject (karta) in Bangla", by, in International Journal of Bengal Studies, Jan 2014
9. Sujan Kumar Saha, Pabitra Mitra and Sudeshna Sarkar.
A Comparative Study on Feature Reduction Approaches in Hindi and Bengali Named Entity Recognition Knowledge-Based Systems. Vol 27 (Mar 2012) pp 322–332
10. Sujan Kumar Saha, Shashi Narayan, Sudeshna Sarkar, Pabitra Mitra,
A Composite Kernel for Named Entity Recognition
Pattern Recognition Letters, Vol 31-2, 1591-97 (2010)
11. Plaban Kumar Bhowmick, Sudeshna Sarkar, Anupam Basu,
Ontology Based User Modeling for Personalized Information Access
International Journal of computer Science & Applications, 7(1): 1-22 (2010)
12. Plaban Kumar Bhowmick, Devshri Roy, Sudeshna Sarkar, Anupam Basu,
A Framework for Manual Ontology Engineering for Management of Learning Material Repository
International Journal of computer Science & Applications, 7(2): 30-52 (2010)
13. Sujan Kumar Saha, Sudeshna Sarkar, Pabitra Mitra.
Feature selection techniques for maximum entropy based biomedical named entity recognition.
Journal of Biomedical Informatics. Vol 42, Issue 5, October 2009, pp 905-911. Elsevier Science.
14. Devshri Roy, Sudeshna Sarkar and Sujoy Ghose
Automatic Extraction of Pedagogic Metadata for Adaptive Learning
International Journal of Artificial Intelligence in Education(IJAIED).
Volume 18 , Issue 2 (April 2008) . Pages 97-118
15. Devshri Roy, Sudeshna Sarkar and Sujoy Ghose
Learning Material Annotation for Flexible Tutorial Systems.
Journal of Intelligent Systems, (JIS), Vol. 16, No. 4, 2007.
16. Sudeshna Sarkar,
Regular Expression Matching for Multiscript Databases,
Bulletin on the Technical Committee on Data Engineering, IEEE Computer Society (IEEE DEB), Volume 30,
No 1, March 2007
17. Monojit Choudhury, Rahul Saraf, Vijit Jain, Animesh Mukherjee, Sudeshna Sarkar, Anupam Basu
Investigation and Modeling of the Structure of Texting Language
International Journal on Document Analysis and Recognition (IJADR), Springer.
Volume 10, Numbers 3-4, December 2007.
pages 157--174.
18. Monojit Choudhury, Anupam Basu, Sudeshna Sarkar(2006)
Multi-Agent Simulation of Emergence of Schwa Deletion Pattern in Hindi,
The Journal of Artificial Societies and Social Simulation (JASSS), Volume 9, Issue 2, March 2006.
URL: <<http://jasss.soc.surrey.ac.uk/9/2/2.html>>, ISSN: 1460-7425.
19. Sandipan Dandapat, Sudeshna Sarkar, Anupam Basu.
A Hybrid Model for Part-of-Speech Tagging and its Application to Bengali.
International Journal of Information Technology Volume 1 Number 4 2004: pages 169-173. ISSN: 1305-239X
20. Devshri Roy, Sudeshna Sarkar and Sujoy Ghose,
Learning material annotation for flexible tutoring systems,
Journal of Intelligent Systems, 16(4), pp 293—306, 2007.
21. Samit Bhattacharya, Sudeshna Sarkar, & Anupam Basu.
Sanyog - A Speech Enabled Communication System for the Speech Impaired and People with Multiple

Disorders

Special Issue of Journal of Technology in Human Services (JTHS). 25 (1/2) Haworth Press, PA. Expected date of publication: May 2007

22. Mund, G B, Mall, R and Sarkar, S,
Computation of intraprocedural dynamic program slices.
Information and Software Technology, Vol. 45 , pp 499-512, 2003.
23. Mund, G B, Mall, R and Sarkar, S.
An Efficient Dynamic Program Slicing Technique
Information and Software Technology, Vol. 44 No. 2, pp 123-132, 2002.
24. Sarkar, Sudeshna, Chakrabarti, P.P. and Ghose, Sujoy.
A Framework and Algorithms for Learning in Search Based Systems,
In IEEE Trans. on Knowledge & Data Engineering, Vol. 10, No. 4, July/August 1998.
25. Sarkar, Sudeshna, Chakrabarti, P.P. and Ghose, Sujoy.
Learning While Solving Problems in Best First Search."
In IEEE Transactions of Systems, Man & Cybernetics, Part A, Vol. 28, No. 4, July 1998, pp. 535-542.
26. Sudeshna Sarkar, Sujoy Ghose and P P Chakrabarti
Learning for efficient search
Sadhana. June 1996, pp 291-315
27. Roy Devshri, Sarkar Sudeshna, Ghose Sujoy
A comparative study of learning Object Metadata, Learning Material Repositories and Automatic Metadata Annotation
TMR e-book series, Technomathematics Research Foundation, Advances in Semantic Computing (Eds. Joshi, Boley & Akerkar), Vol. 2, pp 103 – 126, 2010

Refereed Conference Papers

1. Analysis of an Ad-hoc Platoon Formation and Dissolution Strategy on a Multi-lane Highway S Maiti, S Winter, L Kulik, S Sarkar GeoComputation 2019
2. Mondal, Ishani, Sukannya Purkayastha, Sudeshna Sarkar, Pawan Goyal, Jitesh Pillai, Amitava Bhattacharyya, and Mahanandeeshwar Gattu. "Medical Entity Linking using Triplet Network." In Proceedings of the 2nd Clinical Natural Language Processing Workshop, pp. 95-100. 2019.
3. Sinchani Chakraborty, Sudeshna Sarkar, Pawan Goyal, Mahanandeeshwar Gattu: Biomedical Relation Classification by single and multiple source domain adaptation. LOUHI@EMNLP 2019: 75-80
4. Sukannya Purkayastha, Ishani Mondal, Sudeshna Sarkar, Pawan Goyal, Jitesh K. Pillai: Drug-Drug Interactions Prediction Based on Drug Embedding and Graph Auto-Encoder. BIBE 2019: 547-552
5. Muthusamy Chelliah, Yong Zheng, Sudeshna Sarkar: Recommendation for Multi-stakeholders and through Neural Review Mining. CIKM 2019: 2979-2981
6. Ashim Gupta, Pawan Goyal, Sudeshna Sarkar, Mahanandeeshwar Gattu: Fully Contextualized Biomedical NER. ECIR (2) 2019: 117-124
7. Gourab Chowdhury, Madiraju Srilakshmi, Mainak Chain, Sudeshna Sarkar: Neural Factorization for Offer Recommendation using Knowledge Graph Embeddings. eCOM@SIGIR 2019
8. Alapan Kuila, Sarath chandra Bussa, Sudeshna Sarkar: A Neural Network based Event Extraction System for Indian Languages. FIRE (Working Notes) 2018: 291-301
9. Omprakash Sonie, Sudeshna Sarkar, Surender Kumar: Concept to code: learning distributed representation of heterogeneous sources for recommendation. RecSys 2018: 531-532
10. Prabir Mallick, Sudeshna Sarkar, Pabitra Mitra: Decision recommendation system for transporters in an online freight exchange platform. COMSNETS 2017: 448-453
11. Ayan Das, Affan Zaffar, Sudeshna Sarkar: Delexicalized transfer parsing for low-resource languages using transformed and combined treebanks. CoNLL Shared Task (2) 2017: 182-190
12. Alapan Kuila, Sudeshna Sarkar: An Event Extraction System via Neural Networks. FIRE (Working Notes) 2017: 136-139
13. Sonam Singh, Sudeshna Sarkar, Pabitra Mitra: A deep learning based approach with adversarial regularization for Doppler weather radar ECHO prediction. IGARSS 2017: 5205-5208
14. Sonam Singh, Sudeshna Sarkar, Pabitra Mitra: Leveraging Convolutions in Recurrent Neural Networks for Doppler Weather Radar Echo Prediction. ISNN (2) 2017: 310-317

15. Debanjan Paul, Sudeshna Sarkar, Muthusamy Chelliah, Chetan Kalyan, Prajit Prashant Sinai Nadkarni: Recommendation of High Quality Representative Reviews in e-commerce. RecSys 2017: 311-315
16. Muthusamy Chelliah, Sudeshna Sarkar: Product Recommendations Enhanced with Reviews. RecSys 2017: 398-399
17. Das A., Yerra P. , Kumar K. , Sarkar S., A study of attention-based Neural Machine Translation models on Indian Languages, 6th Workshop on South and Southeast Asian Natural language Processing, Osaka, Japan (2016)
18. Das A., Saha A. , Sarkar S., Cross-lingual transfer parsing from Hindi to Bengali using delexicalization and chunking, 13th International Conference on Natural Language Processing, ICON 2016, Varanasi, India (2016)
19. Das A., Saha A. , Sarkar S., Development of a Bengali parser by cross-lingual transfer from Hindi, WSSANLP 2016: 6th Workshop on South and Southeast Asian Natural language Processing, Osaka, Japan (2016)
20. Saha A., Sarkar S., Enhancing Neural Network based Dependency Parsing Using Morphological Information for Hindi, 17th International Conference on Intelligent Text Processing and Computational Linguistics, CICLING 2016, Konya, Turkey (2016)
21. Aziz R., Kedia M. , Dan S. , Basu S. , Sarkar S. , Mitra S. , Mitra P., Identifying and Characterizing Truck Stops from GPS Data, Industrial Conference on Data Mining 2016, New York, USA (2016)
22. Gope S., Sarkar S. , Mitra P., Prediction of Extreme Rainfall using Hybrid Convolutional -Long Short Term Memory Networks, 6th International Workshop on Climate Informatics: CI 2016, Colorado, USA (2016)
23. Sulagna Gope, Sudeshna Sarkar, Pabitra Mitra, Subimal Ghosh: Early Prediction of Extreme Rainfall Events: A Deep Learning Approach. ICDM 2016: 154-167
24. Bhattacharya P., Goyal P. , Sarkar S., Query Translation for Cross-Language Information Retrieval using Multilingual Word Clusters, WSSANLP, Osaka, Japan (2016)
25. Bhattacharya P., Goyal P. , Sarkar S., Using Word Embeddings for Query Translation for Hindi to English Cross Language Information Retrieval, 7th International Conference on Intelligent Text Processing and Computational Linguistics, Konya, Turkey (2016)
26. R Aziz, Kedia, M. ; Dan, S. ; Sarkar, S. ; Mitra, S. ; Mitra, P. Segmenting Highway Network Based on Speed Profiles 18th International Conference on Intelligent Transportation Systems (ITSC), 2015 IEEE 15-18 Sept. 2015, Las Palmas, Page(s): 2927 – 2932
27. Prasath, Rajendra, Sudeshna Sarkar, and Philip O'Reilly. "Improving Cross Language Information Retrieval Using Corpus Based Query Suggestion Approach." CICLING 2015 Computational Linguistics and Intelligent Text Processing. Springer International Publishing, 2015. 448-457.
28. Barik, Biswanath, and Sudeshna Sarkar. "Pattern based pruning of morphological alternatives of Bengali wordforms." Advances in Computing, Communications and Informatics (ICACCI, 2014 International Conference on. IEEE, 2014.
29. Rajendra Prasath, Sudeshna Sarkar, Philip O'Reilly RI for IR: Capturing Term Contexts Using Random Indexing for Comprehensive Information Retrieval Human-Inspired Computing and Its Applications Pages 104-112, Springer International Publishing
30. Arohi Kumar, Amit Kumar Meher, Sudeshna Sarkar Personalized Search over Medical Forums Mining Intelligence and Knowledge Exploration, MIKE 2014 pages 11-20, Springer International Publishing
31. Anshul Gupta, Aurosish Mishra, Satya Gautam Vadlamudi, P. P. Chakrabarti, Sudeshna Sarkar, Tridib Mukherjee, Nathan Gnanasambandam: A Mobility Simulation Framework Of Humans With Group Behavior Modeling. ICDM 2013: 1067-1072
32. Rajendra Prasath, Sudeshna Sarkar A Pseudo-Relevance Feedback Based Method to Find Comprehensive Web Documents MICAI (1) 2013: 355-366.
33. R. Rajendra Prasath, Sudeshna Sarkar: Query Expansion Using PRF-CBD Approach for Documents Retrieval. PReMI 2013: 495-500

34. Sanjay Chatterji,, Diptesh Chatterjee, and Sudeshna Sarkar.
An Efficient Technique for De-Noising Sentences using Monolingual Corpus and Synonym Dictionary.
In *COLING (Demos)*, pp. 59-66. 2012.
35. Sanjay Chatterji, Nabanita Datta, Arnab Dhar, Biswanath Barik, Sudeshna Sarkar, and Anupam Basu.
Repairing Bengali Verb Chunks for Improved Bengali to Hindi Machine Translation.
In *24th International Conference on Computational Linguistics*, p. 65. 2012.
36. Sanjay Chatterji, Arnab Dhar, Sudeshna Sarkar, and Anupam Basu.
Translations of Ambiguous Hindi Pronouns to Possible Bengali Pronouns.
In *24th International Conference on Computational Linguistics*, p. 125. 2012.
37. Satya Gautam Vadlamudi, Partha Pratim Chakrabarti, and Sudeshna Sarkar.
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In *10th Australasian Data Mining Conference (AusDM), CRPIT*, vol. 134, pp. 209-219. 2012.
38. Desarkar, Maunendra Sankar, and Sudeshna Sarkar.
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In *UMAP Workshops*. 2012.
39. Maunendra Sankar Desarkar, Sudeshna Sarkar, and Roopam Saxena.
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in *20th International Conference on User Modeling, Adaptation and Personalization, UMAP 2012*,
Montreal, July 16-20, 2012.
40. Maunendra Sankar Desarkar, Sudeshna Sarkar, Pabitra Mitra
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Barcelona, Spain.
41. Rajendra Prasath and Sudeshna Sarkar .
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Intelligence., Amsterdam.
42. Sumit Das, Anupam Basu and Sudeshna Sarkar.
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CICLing, 2011, Japan.
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43. Sanjay Chatterji, Praveen Sonare, Sudeshna Sarkar and Anupam Basu
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44. Sanjay Chatterji, Arnab Dhar, Biswanath Barik, Moumita PK, Sudeshna Sarkar, Anupam Basu.
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NLP Tools Contest, ICON 2011.
45. Diptesh Chatterjee and Sudeshna Sarkar and Arpit Mishra.
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Proceedings of the 4th International Workshop on Cross Lingual Information Access at COLING 2010,
pages 35–42, Beijing, August 2010
46. Maunendra Sankar Desarkar, Rahul Joshi and Sudeshna Sarkar
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Lecture Notes in Computer Science, 2011, Volume 6744/2011, 268-273,
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52. R.Rajendra Prasath and Sudeshna Sarkar,
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Proceedings of the First Norwegian Artificial Intelligence Symposium, pp.79 - 90, November 2009.
Editors: Anders *et al*; ISBN: 978-82-519-2519-8; Publisher: Tapir Akademisk Forlag, 2009
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2nd Indian International conference on AI, IICAI 2005, Pune: 3576-3592.
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