

Indradyumna Roy

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RESEARCH INTERESTS	Designing neural models for representation learning and interaction modelling on graphs and sets. Complex multi-modal information retrieval and question answering.	
EDUCATION	Indian Institute of Technology, Bombay, India. PhD in Computer Science and Engineering. Jul'21– Present. Topic: Representation Learning for Scalable and Multi-modal Graph Retrieval. Advisors: Abir De, Soumen Chakrabarti. Recipient of Prime Minister's Research Fellowship (2022). CGPA: 10/10. Indian Institute of Technology, Bombay, India. Master of Technology in Computer Science and Engineering. Jul'15– Jun'17. CGPA: 9.12/10. Jadavpur University, Kolkata, India. Bachelor of Engineering in Computer Science and Engineering. Jul'09– Jun'13. CGPA: 8.19/10.	
PREVIOUS APPOINTMENTS	Indian Institute of Technology, Bombay, India. Project Research Assistant. Jan'20– Jun'21 Samsung R&D Institute India-Bangalore, Karnataka India. Software Engineer. Jul'17– Aug'19 Synopsys India Pvt. Ltd., Bangalore, Karnataka India. R&D Engineer. Aug'13– Jul'15	
PUBLICATIONS	Google Scholar Profile DBLP Profile [1] Indradyumna Roy , Soumen Chakrabarti and Abir De. <i>Maximum Common Subgraph Guided Graph Retrieval: Late and Early Interaction Networks</i> . In Neural Information Processing Systems (NeurIPS), 2022. [2] Indradyumna Roy , Venkata Sai Velugoti, Soumen Chakrabarti and Abir De. <i>Interpretable Neural Subgraph Matching for Graph Retrieval</i> . In AAAI Conference on Artificial Intelligence (AAAI), 2022. [3] Indradyumna Roy , Abir De, Soumen Chakrabarti. <i>Adversarial Permutation Guided Node Representations for Link Prediction</i> . In AAAI Conference on Artificial Intelligence (AAAI), 2021. [4] Soham De, Indradyumna Roy , Tarunima Prabhakar, Kriti Suneja, Sourish Chaudhuri, Rita Singh, Bhiksha Raj,. <i>Plagiarism Detection in Polyphonic Music using Monaural Signal Separation</i> . In InterSpeech (ICSA), 2012.	
REVIEWING	AAAI (Reviewer, 2022, 2023). ICLR (Sub-Reviewer, 2021). TACL (Sub-Reviewer, 2022)	

MTECH THESIS	<p>Topic : Causal Inference on Observational Data (June'16– June'17)</p> <p>Advisor: J Saketha Nath.</p> <p>Given a joint distribution, how to infer directionality of causal influence among the involved random variables. How to exploit prior information about causal structure to improve performance of machine learning algorithms.</p>
MTECH SEMINAR	<p>Topic : Diverse Multiple Kernel Learning (Jan'16– May'16)</p> <p>Advisor: J Saketha Nath.</p> <p>Worked on a novel framework for enabling diversification of Kernels selected as part of Multiple Kernel Learning process.</p>
SELECTED PROJECTS	<p>[1] TextJoin (Sept'16– May'17) Guide: Soumen Chakrabarti. Improved question answering over text, preferably without using a knowledge base. Extraction, Scoring and Ranking of candidate entities based on evidence snippets extracted from multiple documents, supporting type and relationship specified in query. Compiled a list of ~150 queries where current search engines perform poorly and built a preliminary system to provide ranked answer entities for those queries.</p> <p>[2] Implementation of Row Level Security in PostGreSQL (Sept'15– Nov'15) Guide: S. Sudarshan. Made changes in Postgresql source to implement row level security on relations. Added support for predicated grants implemented by query rewriting using views.</p> <p>[3] Extractive Summarization of Hindi Documents (July'16– Nov'16) Guide: Pushpak Bhattacharyya. Explored if translation to English space and incorporating word/sentence embeddings can help improve summarization techniques. Implemented TextRank algorithm for extracting most relevant sentences for summary. Incorporated Hindi and English text embeddings for similarity scoring and ranking.</p>
TECHNICAL SKILLS	<p>Programming Languages: C, C++, Python, Matlab</p> <p>Tools and Libraries : \LaTeX, TensorFlow, PyTorch</p>
TEACHING	<p>Teaching Assistant for following courses :</p> <p>[1] CS101: Computer Programming and Utilization (July'15– Dec'15)</p> <p>[2] CS302+CS306: Implementation of Programming Languages (Jan'16– May'16)</p> <p>[3] CS601: Algorithms & Complexity (July'16– Dec'16)</p> <p>[4] CS152-CS156: Abstractions & Paradigms for Programming (Jan'17– May'17)</p> <p>[5] CS768: Learning with Graphs (July'21– Dec'21)</p> <p>[6] CS419M: Introduction to Machine Learning (Jan'22– May'22)</p> <p>[7] CS335+CS337: Artificial Intelligence and Machine Learning (Jul'22– Dec'22)</p>