

# Soumya Sanyal

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## CONTACT INFORMATION

RTH 315, University of Southern California  
Los Angeles, CA 90007

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Website: [soumyasanyal.github.io](https://soumyasanyal.github.io)

## RESEARCH INTERESTS

I am broadly interested in Natural Language Processing and Deep Learning on Graphs. My recent research has focused on robustness of NLP models on reasoning tasks and explanation-based learning.

## EDUCATION

**University of Southern California**, Los Angeles, CA 2020 – Present  
Ph.D. in Computer Science (GPA 3.94/4.0)  
Advisor: Dr. Xiang Ren

**Indian Institute of Technology**, Kharagpur, India 2012 – 2016  
B.Tech in Electronics and Electrical Communication (GPA 8.98/10.0)  
Minor in Computer Science

## WORK EXPERIENCE

**Microsoft Research**, Redmond, USA Jun 2022 – Aug 2022  
*Research Intern, Knowledge and Language Team (remote)*  
Mentored by Dr. Yichong Xu and Dr. Chenguang Zhu in the Knowledge and Language Team. Working on pre-training of language models to incorporate logical reasoning abilities, useful in downstream tasks.

**Indian Institute Science**, Bangalore, India Aug 2018 – Jun 2020  
*Research Assistant, MALL Lab*  
Hosted by Dr. Partha Talukdar, Department of Computational and Data Sciences, IISc (supported by Shell grant). Worked on graph neural networks and its applications in knowledge graph completion, protein modeling and material discovery.

**Goldman Sachs Services Private Limited**, Bangalore, India Jun 2016 – Jul 2018  
*Senior Analyst, Equities Risk Management*  
Part of the global team responsible for developing and managing the risk infrastructure of the equities desk. Worked on financial risk modeling, risk engines and risk monitoring.

## REFEREED CONFERENCE PROCEEDINGS

- [1] [Soumya Sanyal](#), Zeyi Liao, and Xiang Ren. **RobustLR: Evaluating Robustness to Logical Perturbation in Deductive Reasoning**. *2022 Conference on Empirical Methods in Natural Language Processing*. [[Paper](#) | [Code](#)]
- [2] [Soumya Sanyal](#), Harman Singh, and Xiang Ren. **FaiRR: Faithful and Robust Deductive Reasoning over Natural Language**. *60th Annual Meeting of the Association for Computational Linguistics (ACL 2022)*. [[Paper](#) | [Code](#)]
- [3] [Soumya Sanyal](#) and Xiang Ren. **Discretized Integrated Gradients for Explaining Language Models**. *2021 Conference on Empirical Methods in Natural Language Processing*. [[Paper](#) | [Code](#)]
- [4] Aaron Chan, Boyuan Long, Jiashu Xu, [Soumya Sanyal](#), Tanishq Gupta, and Xiang Ren. **SalKG: Learning From Knowledge Graph Explanations for Commonsense Reasoning**. *Thirty-fifth Conference on Neural Information Processing Systems (NeurIPS 2021)*. [[Paper](#) | [Code](#)]
- [5] Zhiqing Sun\*, Shikhar Vashishth\*, [Soumya Sanyal\\*](#), Partha Talukdar, and Yiming Yang. **A Re-evaluation of Knowledge Graph Completion Methods**. *2020 Annual Conference of the Association for Computational Linguistics*. (short) [[Paper](#)]
- [6] [Soumya Sanyal\\*](#), Shikhar Vashishth\*, Vikram Nitin, and Partha Talukdar. **Composition-based Multi-Relational Graph Convolutional Networks**. *International Conference on Learning Representations (ICLR-2020)*. [[Paper](#) | [Code](#)]

	[7] <a href="#">Soumya Sanyal*</a> , Shikhar Vashishth*, Vikram Nitin, Nilesch Agrawal, and Partha Talukdar. <b>InteractE: Improving Convolution-based Knowledge Graph Embeddings by Increasing Feature Interactions</b> . <i>Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI-2020)</i> . [ <a href="#">Paper</a>   <a href="#">Code</a> ]
	[8] Ekagra Ranjan, <a href="#">Soumya Sanyal</a> , and Partha Talukdar. <b>ASAP: Adaptive Structure Aware Pooling for Learning Hierarchical Graph Representations</b> . <i>Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI-2020)</i> . [ <a href="#">Paper</a>   <a href="#">Code</a> ]
REFEREED WORKSHOP PAPERS	[9] Aaron Chan, Boyuan Long, Jiashu Xu, <a href="#">Soumya Sanyal</a> , Tanishq Gupta, and Xiang Ren. <b>SalKG: Learning From Knowledge Graph Explanations for Commonsense Reasoning</b> . <i>ICML 2021 Workshop on Theoretic Foundation, Criticism, and Application Trend of Explainable AI</i> [ <a href="#">Paper</a> ]
	[10] <a href="#">Soumya Sanyal</a> , Janakiraman Balachandran, Naganand Yadati, Abhishek Kumar, Padmini Rajagopalan, Suchismita Sanyal, and Partha Talukdar. <b>MT-CGCNN: Integrating Crystal Graph Convolutional Neural Network with Multitask Learning for Material Property Prediction</b> . <i>NeurIPS 2018 Workshop on Machine Learning for Molecules and Materials</i> . [ <a href="#">Paper</a>   <a href="#">Code</a> ]
PREPRINTS	[11] <a href="#">Soumya Sanyal</a> , Ivan Anishchenko, Anirudh Dagar, David Baker, and Partha Talukdar. <b>ProteinGCN: Protein model quality assessment using Graph Convolutional Networks</b> . <i>Preprint</i> . [ <a href="#">Paper</a>   <a href="#">Code</a> ]
SKILLS	<b>Languages:</b> Python, C++, C, Java, R, JavaScript, AJAX, NodeJS, MatLab, bash <b>DL Frameworks:</b> Pytorch, Pytorch Lightning, Tensorflow, Keras
HONORS AND AWARDS	Graduate Fellowship Award from University of Southern California <b>2020</b> Travel grant for attending AAAI 2020, New York, USA <b>2020</b> Shell travel grant for attending NeurIPS 2018, Montreal, Canada <b>2018</b> Secured 617 rank (among approximately 0.50 million aspirants) in IIT-JEE <b>2012</b> Awarded KVPY scholarships, granted to approx. top 300 meritorious students in India <b>2012</b> Was in top 1% of total aspirants in National Standard Examination in Physics (NSEP) <b>2011</b> Was in top 1% of total aspirants in National Standard Examination in Astronomy (NSEA) <b>2011</b> 3 <sup>rd</sup> rank among 10,000 students in Inter DPS Science & Mathematics Talent Search Exam <b>2009</b> Awarded National Talent Search Examination (NTSE) Scholarship by NCERT <b>2008</b>