CURRICULUM VITAE

Date: December 31, 2022.
Name: Vibhav Gogate
School: Erik Jonsson School of Engineering and Computer Science, University of Texas at Dallas
Department: Computer Science

Educational History

1. Ph.D. in Information and Computer Science, June 2009.
   University of California, Irvine, CA 92697, USA.
   Thesis: Sampling Algorithms for Probabilistic Graphical Models with Determinism
   Thesis Advisor: Rina Dechter
2. M.S. in Computer Science, September 2002.
   University of Maine, Orono, ME 04469, USA.
3. B.S. in Computer Engineering, June 1999.
   University of Mumbai, Maharashtra, India. First Class.

Employment History

- Associate Professor, University of Texas, Dallas (September 2017-Present)
- Assistant Professor, University of Texas, Dallas (September 2011-August 2017)
- Post Doctoral Research Associate, University of Washington, Seattle (August 2009 to August 2011)

Professional Recognition and Honors

- Best paper honorable mention, ACM Conference on Intelligent User Interfaces, 2021.
- NSF CAREER Award, 2017.
- FRIENDs of Research and Innovation, Office of Sponsored Research, University of Texas at Dallas, 2019, 2020, 2021 and 2022.
- Outstanding Researcher Award, Erik Jonsson School of Engineering and Computer Science, University of Texas at Dallas, 2022.
- Outstanding Researcher Award, Erik Jonsson School of Engineering and Computer Science, University of Texas at Dallas, 2017.
- Outstanding Teacher Award, Erik Jonsson School of Engineering and Computer Science, University of Texas at Dallas, 2016.
- Winner of the PASCAL/UAI Probabilistic Inference Challenge, 2012 (won six out of six categories participated. Total categories: nine.).

- Winner of the UAI Approximate Inference Challenge, 2010 (won four out of six categories participated. Total categories: nine.).
- Thesis nominated by University of California, Irvine for the ACM Doctoral Dissertation award, 2009.
- Joseph Fischer Memorial Fellowship Award for Outstanding Academic Achievement in Computer Science at University of California, Irvine, 2004.
- Graduate Fellowship, University of California, Irvine, 2002-2003.

Publications

Journal Papers

1. C. Roy, M. Nourani, M. Shanbag, S. Arya, T. Rahman, E. Ragan, N. Ruozzi, and V. Gogate. Explainable activity recognition in videos using deep learning and tractable probabilistic models. *ACM Transactions on Intelligent Interactive Systems*, 2023.
2. M. Nourani, C. Roy, D. R. Honeycutt, E. D. Ragan, and V. Gogate. Detoxer: A visual debugging tool with multi-scope explanations for temporal multi-label classification. *IEEE Computer Graphics and Applications*, 42(6):37–46, 2022.
3. M. Nourani, C. Roy, J. Block, D. Honeycutt, T. Rahman, E. Ragan, and V. Gogate. On the importance of user backgrounds and impressions: Lessons learned from interactive AI applications. *ACM Transactions on Intelligent Interactive Systems*, 12(4), 2022.
4. C. Roy, M. Nourani, D. R. Honeycutt, J. E. Block, T. Rahman, E. D. Ragan, N. Ruozzi, and V. Gogate. Explainable activity recognition in videos: Lessons learned. *Applied AI Letters*, 2(4):e59, 2021.
5. V. Gogate and P. Domingos. Probabilistic theorem proving. *Communications of the ACM*, 59(7):107–115, 2016.
6. V. Gogate and R. Dechter. Importance sampling-based estimation over AND/OR search spaces for graphical models. *Artificial Intelligence*, 184-185:38–77, 2012.
7. V. Gogate and R. Dechter. SampleSearch: Importance sampling in presence of determinism. *Artificial Intelligence*, 175(2):694–729, 2011.
8. V. Gogate and R. Dechter. Sampling-based lower bounds for counting queries. *Intelligenza Artificiale*, 5(2):171–188, 2011.
9. R. Mateescu, K. Kask, V. Gogate, and R. Dechter. Iterative Join Graph Propagation algorithms. *Journal of Artificial Intelligence Research*, 37:279–328, 2010.

Highly Refereed Conference Papers

1. H. Dong, J. Amato, V. Gogate, and N. Ruozzi. A new modeling framework for continuous, sequential domains. In *Proceedings of The 26th International Conference on Artificial Intelligence and Statistics*, page (To appear), 2023.

2. S. Jin, V. Komaragiri, T. Rahman, and V. Gogate. Learning tractable probabilistic models from inconsistent local estimates. In *Advances in Neural Information Processing Systems*, volume 35, page To appear. Curran Associates, Inc., 2022.

3. R. Peddi, T. Rahman, and V. Gogate. Robust learning of tractable probabilistic models. In James Cussens and Kun Zhang, editors, *Proceedings of the Thirty-Eighth Conference on Uncertainty in Artificial Intelligence*, volume 180 of *Proceedings of Machine Learning Research*, pages 1572–1581. PMLR, 01–05 Aug 2022.

4. H. Dong, C. Roy, T. Rahman, V. Gogate, and N. Ruozzi. Conditionally tractable density estimation using neural networks. In Gustau Camps-Valls, Francisco J. R. Ruiz, and Isabel Valera, editors, *Proceedings of The 25th International Conference on Artificial Intelligence and Statistics*, volume 151 of *Proceedings of Machine Learning Research*, pages 6933–6946. PMLR, 28–30 Mar 2022.

5. T. Rahman, S. Rouhani, and V. Gogate. Novel upper bounds for the constrained most probable explanation task. In *Advances in Neural Information Processing Systems*, volume 33, pages 11949–11960. Curran Associates, Inc., 2021.

6. M. Nourani, D. Honeycutt, E. Block, C. Roy, T. Rahman, E. Ragan, and V.Gogate. Exploration Order Vs. Explanation Presence: A Study of Mental Models and Reliance with Intelligent Systems. In *Joint Proceedings of the Twenty-Sixth ACM Conference on Intelligent User Interfaces*, pages 2007–2023, 2021.

7. C. Roy, T. Rahman, H. Dong, N. Ruozzi, and V. Gogate. Dynamic cutset networks. In *Proceedings of The 24th International Conference on Artificial Intelligence and Statistics*, pages 3106–3114, 2021.

8. S. Rouhani, T. Rahman, and V. Gogate. A novel approach for constrained optimization in graphical models. In *Advances in Neural Information Processing Systems*, volume 33, pages 11949–11960. Curran Associates, Inc., 2020.

9. M. Nourani, C. Roy, T. Rahman, N. Ruozzi, V. Gogate, and E. D. Ragan. Investigating the importance of first impressions and explainable AI with interactive video analysis. In *ACM CHI Conference on Human Factors in Computing Systems* , 2020.

10. T. Rahman, S. Jin, and V. Gogate. Cutset Bayesian Networks: A New Representation for Learning Rao-Blackwellised Graphical Models. In Sarit Kraus, editor, *Proceedings of the Twenty-Eighth International Joint Conference on Artificial Intelligence*, pages 5751–5757, 2019.

11. T. Rahman, S. Jin, and V. Gogate. Look Ma, No Latent Variables: Accurate Cutset Networks via Compilation. In Kamalika Chaudhuri and Ruslan Salakhutdinov, editors, *Proceedings of the Thirty-Sixth International Conference on Machine Learning*, volume 97 of *Proceedings of Machine Learning Research*, pages 5311–5320. PMLR, 2019.

12. C. Roy, M. Shanbhag, M. Nourani, T. Rahman, S. Kabir, V. Gogate, N. Ruozzi, and E. D. Ragan. Explainable activity recognition in videos. In Christoph Trattner, Denis Parra, and Nathalie Riche, editors, *Joint Proceedings of the*

Twenty-Fourth ACM Conference on Intelligent User Interfaces, pages 2327–2337, 2019.

13. H. Mittal, A. Bhardwaj, V. Gogate, and P. Singla. Domain-size aware markov logic networks. In Kamalika Chaudhuri and Masashi Sugiyama, editors, *The Twenty-Second International Conference on Artificial Intelligence and Statistics*, pages 3216–3224, 2019.

14. S. Rouhani, T. Rahman, and V. Gogate. Algorithms for the nearest assignment problem. In *Proceedings of the Twenty-Seventh International Joint Conference on Artificial Intelligence*, pages 5096–5102, 2018.

15. L. Chou, W. Gatterbauer, and V. Gogate. Dissociation-based oblivious bounds for weighted model counting. In *Proceedings of the Thirty-Fourth Conference on Uncertainty in Artificial Intelligence*, pages 866–875, 2018.

16. V. Sharma, N. A. Sheikh, H. Mittal, V. Gogate, and P. Singla. Lifted marginal MAP inference. In *Proceedings of the Thirty-Fourth Conference on Uncertainty in Artificial Intelligence*, pages 917–926, 2018.

17. L. Chou, P. Sahoo, S. Sarkhel, N. Ruozzi, and V. Gogate. Automatic parameter tying: A new approach for regularized parameter learning in markov networks. In *Thirty Second AAAI Conference on Artificial Intelligence*, page (To appear), 2018.

18. D. Smith, S. Rouhani, and V. Gogate. Order statistics for probabilistic graphical models. In *Proceedings of the Twenty-Sixth International Joint Conference on Artificial Intelligence, IJCAI-17*, pages 4625–4631, 2017.

19. S. Sarkhel, D. Venugopal, N. Ruozzi, and V. Gogate. Efficient inference for untied mlns. In *Proceedings of the Twenty-Sixth International Joint Conference on Artificial Intelligence, IJCAI-17*, pages 4617–4624, 2017.

20. J. Lu, D. Venugopal, V. Gogate, and V. Ng. Joint inference for event coreference resolution. In *26th International Conference on Computational Linguistics*, pages 3264–3275, 2016.

21. T. Rahman and V. Gogate. Merging strategies for sum-product networks: From trees to graphs. In *Proceedings of the Thirty-Second Conference Conference on Uncertainty in Artificial Intelligence*, pages 617–626, 2016.

22. R. de Salvo Braz, C. O'Reilly, V. Gogate, and R. Dechter. Probabilistic inference modulo theories. In *Proceedings of the Twenty-Fifth International Joint Conference on Artificial Intelligence*, pages 3591–3599, 2016.

23. T. Rahman and V. Gogate. Learning ensembles of cutset networks. In *AAAI conference on Artificial Intelligence*, pages 3301–3307, 2016.

24. S. Sarkhel, D. Venugopal, T. A. Pham, P. Singla, and V. Gogate. Scalable training of markov logic networks using approximate counting. In *AAAI conference on Artificial Intelligence*, pages 1067–1073, 2016.

25. L. Chou, S. Sarkhel, N. Ruozzi, and V. Gogate. On parameter tying by quantization. In *AAAI conference on Artificial Intelligence*, pages 3241–3247, 2016.

26. D. Smith and V. Gogate. Bounding the cost of search-based lifted inference. In C. Cortes, N.D. Lawrence, D.D. Lee, M. Sugiyama, and R. Garnett, editors, *Advances in Neural Information Processing Systems 28*, pages 946–954. Curran Associates, Inc., 2015.

27. S. Sarkhel, P. Singla, and V. Gogate. Fast lifted map inference via partitioning. In C. Cortes, N.D. Lawrence, D.D. Lee, M. Sugiyama, and R. Garnett, editors, *Advances in Neural Information Processing Systems 28*, pages 3222–3230. Curran Associates, Inc., 2015.

28. H. Mittal, A. Mahajan, V. Gogate, and P. Singla. Lifted inference rules with constraints. In C. Cortes, N.D. Lawrence, D.D. Lee, M. Sugiyama, and R. Garnett, editors, *Advances in Neural Information Processing Systems 28*, pages 3501–3509. Curran Associates, Inc., 2015.

29. D. Venugopal, S. Sarkhel, and V. Gogate. Just count the satisfied groundings: Scalable local-search and sampling based inference in mlns. In *AAAI conference on Artificial Intelligence*, pages 3606–3612, 2015.

30. D. Venugopal, C. Chen, V. Gogate, and V. Ng. Relieving the computational bottleneck: Joint inference for event extraction with high-dimensional features. In *Proceedings of the 2014 Conference on Empirical Methods in Natural Language Processing, EMNLP*, pages 831–843, 2014.

31. S. Sarkhel, D. Venugopal, P. Singla, and V. Gogate. An integer polynomial programming based framework for lifted MAP inference. In *Advances in Neural Information Processing Systems 27: Annual Conference on Neural Information Processing Systems 2014*, pages 3302–3310, 2014.

32. H. Mittal, P. Goyal, V. Gogate, and P. Singla. New rules for domain independent lifted MAP inference. In *Advances in Neural Information Processing Systems 27: Annual Conference on Neural Information Processing Systems 2014*, pages 649–657, 2014.

33. D. Venugopal and V. Gogate. Scaling-up importance sampling for markov logic networks. In *Advances in Neural Information Processing Systems 27: Annual Conference on Neural Information Processing Systems 2014*, pages 2978–2986, 2014.

34. D. Venugopal and V. Gogate. Evidence-based clustering for scalable inference in markov logic. In *Machine Learning and Knowledge Discovery in Databases - European Conference, ECML PKDD 2014, Nancy, France, September 15-19, 2014. Proceedings, Part III*, pages 258–273, 2014.

35. T. Rahman, P. Kothalkar, and V. Gogate. Cutset networks: A simple, tractable, and scalable approach for improving the accuracy of chow-liu trees. In *Machine Learning and Knowledge Discovery in Databases - European Conference, ECML PKDD 2014, Nancy, France, September 15-19, 2014. Proceedings, Part II*, pages 630–645, 2014.

36. D. Smith and V. Gogate. Loopy Belief Propagation in Presence of Determinism. In *Proceedings of the Seventeenth International Conference on Artificial Intelligence and Statistics*, pages 895–903, 2014.

37. S. Sarkhel, V. Venugopal, P. Singla, and V. Gogate. Lifted MAP Inference for Markov Logic Networks. In *Proceedings of the Seventeenth International Conference on Artificial Intelligence and Statistics*, pages 859–867, 2014.

38. D. Smith and V. Gogate. The Inclusion-Exclusion Rule and its Application to the Junction Tree Algorithm. In *Proceedings of the Twenty Third International Joint Conference on Artificial Intelligence*, pages 2568–2575, 2013.

39. V. Gogate and P. Domingos. Structured Message Passing. In *Proceedings of the Twenty-Ninth Conference on Uncertainty in Artificial Intelligence*, pages 252–261, 2013.

40. D. Venugopal and V. Gogate. Dynamic Blocking and Collapsing for Gibbs Sampling. In *Proceedings of the Twenty-Ninth Conference on Uncertainty in Artificial Intelligence*, pages 664–673, 2013.

41. D. Venugopal and V. Gogate. GiSS: Combining SampleSearch and Importance Sampling for Inference in Mixed Probabilistic and Deterministic Graphical Models. In *Proceedings of the Twenty-Seventh AAAI Conference on Artificial Intelligence*, pages 897–904, 2013.

42. D. Venugopal and V. Gogate. On Lifting the Gibbs Sampling Algorithm. In *Proceedings of the Twenty Sixth Annual Conference on Neural Information Processing Systems*, pages 1664–1672, 2012.

43. V. Gogate, A. Jha, and D. Venugopal. Advances in Lifted Importance Sampling. In *Proceedings of the Twenty-Sixth AAAI Conference on Artificial Intelligence*, pages 1910–1916, 2012.

44. V. Gogate and P. Domingos. Probabilistic Theorem Proving. In *Proceedings of the Twenty-Seventh Conference on Uncertainty in Artificial Intelligence*, pages 256–265, 2011.

45. V. Gogate and P. Domingos. Approximation by Quantization. In *Proceedings of the Twenty-Seventh Conference on Uncertainty in Artificial Intelligence*, pages 247–255, 2011.

46. A. Jha, V. Gogate, A. Meliou, and D. Suciu. Lifted Inference from the Other Side: The tractable Features. In *Proceedings of the Twenty Fourth Annual Conference on Neural Information Processing Systems*, pages 973–981, 2010.

47. V. Gogate, W. A. Webb, and P. Domingos. Learning Efficient Markov Networks. In *Proceedings of the Twenty Fourth Annual Conference on Neural Information Processing Systems*, pages 748–756, 2010.

48. V. Gogate and P. Domingos. Formula-Based Probabilistic Inference. In *Proceedings of the Twenty-Sixth Conference on Uncertainty in Artificial Intelligence*, pages 210–219, 2010.

49. V. Gogate and R. Dechter. On combining graph-based variance reduction schemes. In *Proceedings of the Thirteenth International Conference on Artificial Intelligence and Statistics*, pages 257–264, 2010.

50. V. Gogate and R. Dechter. AND/OR Importance Sampling. In *Proceedings of the Twenty-Fourth Conference on Uncertainty in Artificial Intelligence*, pages 212–219, 2008.

51. V. Gogate and R. Dechter. Studies in Solution Sampling. In *Proceedings of the Twenty-Third AAAI Conference on Artificial Intelligence*, pages 271–276, 2008.

52. V. Gogate and R. Dechter. Approximate Solution Sampling (and Counting) on AND/OR Spaces. In *Proceedings of Fourteenth International Conference on Principles and Practice of Constraint Programming*, pages 534–538, 2008.

53. V. Gogate and R. Dechter. Approximate Counting by Sampling the Backtrack-free Search Space. In *Proceedings of the Twenty-Second National Conference on Artificial Intelligence*, pages 198–203, 2007.

54. V. Gogate, B. Bidyuk, and R. Dechter. Studies in Lower Bounding Probability of Evidence using the Markov Inequality. In *Proceedings of the Twenty-Third Conference on Uncertainty in Artificial Intelligence*, pages 141–148, 2007.

55. V. Gogate and R. Dechter. SampleSearch: A Scheme that Searches for Consistent Samples. In *Proceedings of the Eleventh International Conference on Artificial Intelligence and Statistics*, pages 147–154, 2007.

56. V. Gogate, R. Dechter, B. Bidyuk, J. Marca, and C. Rindt. Modeling transportation and activity routines using hybrid dynamic mixed networks. In *Eighty Fifth annual meeting of the Transportation Research Board*, 2006.

57. V. Gogate and R. Dechter. A new algorithm for sampling CSP solutions uniformly at random. In *Proceedings of Twelfth International Conference on Principles and Practice of Constraint Programming*, pages 711–715, 2006.

58. V. Gogate and R. Dechter. Approximate inference algorithms for hybrid Bayesian networks with discrete constraints. In *Proceedings of the Twenty-First Conference on Uncertainty in Artificial Intelligence*, pages 209–216, 2005.

59. V. Gogate, R. Dechter, B. Bidyuk, J. Marca, and C. Rindt. Modeling transportation routines using hybrid dynamic mixed networks. In *Proceedings of the Twenty-First Conference on Uncertainty in Artificial Intelligence*, pages 216–223, 2005.

60. K. Kask, R. Dechter, and V. Gogate. Counting-based look-ahead schemes for constraint satisfaction. In *Proceedings of Tenth International Conference on Principles and Practice of Constraint Programming*, pages 317–331, 2004.

61. V. Gogate and R. Dechter. A Complete Anytime Algorithm for Treewidth. In *Proceedings of the Twentieth Conference on Uncertainty in Artificial Intelligence*, pages 201–208, 2004.

Refereed Workshop Papers

1. S. Jin, V. Komaragiri, T. Rahman, and V. Gogate. Learning cutset networks by integrating data and noisy, local estimates. In *Proceedings of the UAI Workshop on Tractable Probabilistic Modeling (TPM)*, July 2022.

2. R. Peddi and Gogate V. Distributionally robust learning of sum-product networks. In *Proceedings of the UAI Workshop on Tractable Probabilistic Modeling (TPM)*, July 2022.

3. R. Peddi, T. Rahman, and V. Gogate. Robust learning of tractable probabilistic models. In *Proceedings of the UAI Workshop on Tractable Probabilistic Modeling (TPM)*, July 2022.

4. Y. Yang, N. Ruozzi, and V. Gogate. Scalable neural network compression and pruning using hard clustering and L1 regularization. *Workshop on Network Iterpretability, 33rd Conference on Artificial Intelligence (AAAI)*, 2019.

5. D. Smith, P. Singla, and V. Gogate. Lifted region-based belief propagation. In *IJCAI workshop on Statistical Relational Artificial Intelligence*, 2016.

6. H. Mittal, S. Singh, P. Singla, and V. Gogate. Fine-grainedweight learning in markov logic through latent subtype discovery. In *IJCAI workshop on Statistical Relational Artificial Intelligence*, 2016.

7. Rodrigo de Salvo Braz, Ciaran O?Reilly, Vibhav Gogate, and Rina Dechter. Probabilistic inference modulo theories. *Workshop on Hybrid Reasoning at IJCAI*, 2015.

8. S. Sarkhel and V. Gogate. Lifting WALKSAT-based Local Search Algorithms for MAP Inference. In *AAAI 2013 Workshop on Statistical Relational AI*, 2013.

9. V. Gogate and P. Domingos. Probabilistic Theorem Proving: A Unifying Approach for Inference in Probabilistic Programming. In *NIPS 2012 Workshop on Probabilistic Programming*, 2010.

10. D. Venugopal and V. Gogate. On Lifting the Gibbs Sampling Algorithm. In *Second Workshop on Statistical Relational AI*, 2012.

11. V. Gogate and P. Domingos. Exploiting Logical Structure in Lifted Probabilistic Inference. In *AAAI 2010 Workshop on Statistical Relational Learning*, 2010.

12. A. Darwiche, R. Dechter, A. Choi, V. Gogate, and L. Otten. Results from the Probablistic Inference Evaluation of UAI 2008. In *Workshop on Evaluating and Disseminating Probabilistic Reasoning Systems* , 2008.

13. V. Gogate and R. Dechter. Approximate Solution Sampling (and Counting) on AND/OR Spaces. In *First Workshop on Counting Problems in CSP, SAT and other neighboring problems*, 2008.

14. V. Gogate. Approximate Inference in Probabilistic Graphical Models with Determinism. In *AAAI 2007 Doctoral Program*, 2007.

15. V. Gogate and R. Dechter. A simple application of sampling importance resampling to solution sampling. In *Doctoral Program of Thirteenth International Conference on Principles and Practice of Constraint Programming*, 2007.

16. V. Gogate and R. Dechter. A new algorithm for sampling CSP solutions uniformly at random. In *Doctoral Program of Twelfth International Conference on Principles and Practice of Constraint Programming*, 2006.

17. K. Kask, R. Dechter, and V. Gogate. New look-ahead schemes for constraint satisfaction. In *Proceedings of the Eighth International Symposium on Artificial Intelligence and Mathematics*, 2004.

Invited Talks and Tutorials

- 2022, Northeastern University, Database and AI Seminar. Title: On The Constrained Most Probable Explanation Problem. August 2022.
- 2022, UAI Workshop on Tractable Probabilistic Models. Title: Algorithms for Solving The Constrained Most Probable Explanation Problem. July 2022.
- 2022, Annals of Mathematics and Artificial Intelligence Conference. Title: Dissociation-Based Lower Bounds for Weighted Model Counting. Jan 2022.
- 2021, IJCAI 2021 Explainable AI Workshop. Title: Explainable, Interpretable Machine Learning using Cutset Networks, Jan 2021.
- 2016, AI seminar, University of Texas, Austin, USA. Title: Approximate Counting and Lifting for Scalable Inference and Learning in Markov Logic, August 2016. *Invited Talk.*
- 2016, UAI'16, 32nd Conference on Uncertainty in Artificial Intelligence, New York City, New York, July 2016. Title: Probabilistic Inference Evaluation. *Invited Talk.*
- 2014, AAAI'14, 4th Workshop on Statistical Relational Artificial Intelligence, Quebec City, Quebec, Canada, July 2014. Title: Fast, Lifted, Sampling-Based Inference in Statistical Relational Models. *Invited Talk.*
- 2014, UAI'14, 30th Conference on Uncertainty in Artificial Intelligence, Quebec City, Quebec, Canada, July 2014. Title: Probabilistic Inference Competition. *Invited Talk.*
- 2013, ICMR '13, ACM International Conference on Multimedia Retrieval, Dallas, Texas, USA, April 16 - 19, 2013. Title: Advanced Machine Learning Techniques for Temporal, Multimedia, and Relational Data. *Tutorial*
- 2012, University of Rochester, Rochester Big Data Forum, October, 2012. Title: Scaling up Probabilistic Inference by Exploiting Logical Structure. *Invited Talk.*
- 2012, UAI'12, 28th Conference on Uncertainty in Artificial Intelligence, Catalina Island, California, USA. Title: Structured Propagation-based and Sampling-based Algorithms for Graphical Models. *Invited Talk.*
- 2012, AI seminar, University of Texas, Austin, USA. Title: Efficient Sampling-based Inference in presence of Logical Structure. *Invited Talk.*
- 2010, Statistics Seminar, University of Washington, Seattle, USA. Title: Formula-Based Probabilistic Inference. *Invited Talk.*
- 2010, AAAI'10, 24th Conference on Artificial Intelligence, Atlanta, Georgia, USA. Title: Sampling Algorithms for Probabilistic and Deterministic Graphical Models. *Tutorial.*
- 2010, UAI'10, 26th Conference on Uncertainty in Artificial Intelligence, Catalina Island, California, USA. Title: Formula SampleSearch. *Invited Talk.*

- 2010, UAI'10, 26th Conference on Uncertainty in Artificial Intelligence, Catalina Island, California, USA. Title: Iterative Join Graph Propagation. *Invited Talk*.
- 2008, Counting'08, First Counting Workshop, Sydney, Australia. Title: Second Probabilistic Reasoning Evaluation. *Invited Talk*.
- 2007, California State University, Long Beach, California, USA. Title: Solution Counting in Backtrack-free search spaces. *Invited Talk*.

External Funding for Original Investigations:

Grants/Contracts Awarded

1. Title: Neuro-Symbolic Dynamic Probabilistic Models: A Unifying Representation and Reasoning Tool for PTG
   PIs: **V. Gogate (PI)**, N. Ruozzi (co-PI), Y. Xiang (co-PI), G. Van den Broeck (co-PI, UCLA), C. Fowlkes (co-PI, UCI) and E. Ragan (co-PI, UFL)
   Time Duration: 12 months (November 2021–November 2025)
   Agency: DARPA
   Total Requested: $4,908,187 (UTD Share: $2,223,809).

2. Title: Supplement to the XAI Program: Tractable Probabilistic Logic Models
   PIs: **V. Gogate (PI)**, N. Ruozzi (co-PI), and E. Ragan (co-PI, UFL)
   Time Duration: 12 months (Jan 2021 to May 2022)
   Agency: DARPA
   Total Requested: $500,000. (UTD Share: $350,000)

3. Title: Tractable Probabilistic Logic Models: A New, Deep Explainable Representation
   PIs: **V. Gogate (PI)**, N. Ruozzi (co-PI), A. Darwiche (co-PI, UCLA), G. Van den Broeck (co-PI, UCLA), E. Ragan (co-PI, TAMU) and P. Singla (co-PI, IIT-Delhi)
   Time Duration: 48 months (June 2017 to May 2022)
   Agency: DARPA
   Total Requested: $4,309,551 (UTD Share: $1,877,556)

4. Title: CAREER: Fast, Accurate Estimation and Prediction using Markov Logic
   PIs: **V. Gogate (PI)**
   Time Duration: 60 months (March 2017 to February 2023)
   Agency: NSF
   Total Requested: $550,000.00

5. Title: RI: Small: Fast, Scalable Joint Inference for NLP using Markov Logic
   PIs: V. Ng (PI, UTDallas) and **V. Gogate** (Co-PI, UTDallas)
   Time Duration: 36 months (Sep. 2015 to Aug. 2018)
   Agency: NSF
   Total Requested: $360,348

6. Title: A Decision Support System for Predicting the Likelihood of C-section and Delivery Complications
   PIs: Dr. Jack Stecher (PI, Baylor Hospital) and **V. Gogate**
   Time Duration: 12 months (March 2014 to June 2015)
   Agency: Baylor Foundation
   Total Requested: $70K (UTD share: Approx. $25K)

7. Title: Lifted Inference for Probabilistic Programming
   PIs: R. de Salvo Braz (SRI International, PI), **V. Gogate (PI)** and D. Sontag (New York University)
   Time Duration: 48 months (October 2013 to November 2017)
   Agency: DARPA
   Total Requested: $3,168,927 (UTD share: Approx. $740K)

8. Title: SBIR: Enhancing the Scaling and Accuracy of Text Analytics Using Joint Inference
   PIs: A. Pfeffer (PI, Charles Rivers Analytics), **V. Gogate** and V. Ng (University of Texas, Dallas)
   Time Duration: 9 months (October 2013 to July 2014)
   Agency: Air Force
   Total Requested: $150K (UTD share: Approx. $75K)

9. Title: A Unified Approach to Abductive Inference
   PIs: P. Domingos (PI, University of Washington), **V. Gogate**, T. Diettrich (Oregon State University), C. Guestrin (University of Washington), D. Lowd (University of Oregon), H. Kautz (University of Rochester), J. Tennenbaum (Massachusetts Institute of Technology), and R. Mooney (University of Texas at Austin)
   Time Duration: 2 years 10 months (August 2011 to June 2014).
   Agency: Army Research Office (ARO)
   Total Requested: $6,250,000. (UTD share: $279,249)

Teaching:

Doctoral Advisement:

1. Yuqiao Chen, Title: Fast Inference and Learning on Hybrid Relational Probabilistic Graphical models. Summer 2022. (Committee member).

2. Shahab Shams, Title: Markov Random Fields, Homomorphism counting and Sidorenko's conjecture. Summer 2022. (Committee member).

3. Chiradeep Roy, Title: Efficient Probabilistic Models for Spatiotemporal Inference. Spring 2022. **(Thesis Advisor)**.

4. Kinjal Basu, Title: Natural language understanding and commonsense reasoning using answer set programming and its applications. Spring 2022. (Committee member).

5. Sara Rouhani, Title: Algorithms for Complex Explanation Queries. Fall 2021. **(Thesis Advisor)**.

6. Hao Xiong, Title: An Efficient Variational Inference Method for MRF Learning and Structured Prediction Tasks. Fall 2021. (Committee member).

7. Shasha Jin, Title: Inference Guided Learning of Probabilistic Models. Summer 2021. **(Thesis Advisor)**.

8. Barbara Mukami Maweu, Title: Validation and Interpretable Model Explanations for Synthesized Data in Healthcare. Summer 2021. (Committee member).

9. Jing Lu, Title: Knowledge-Rich Event Coreference Resolution. Fall 2020. (Committee member).

10. Yuanzhen Guo, Title: Variational Inference Methods for Continuous Probabilistic Graphical Models. Fall 2020. (Committee member).

11. Nandini Ramanan, Title: Efficient and Effective Structure Learning of Graphical Models. Fall 2020. (Committee member).

12. Srijita Das, Title: Sample Efficient Cost-Aware Active Learning. Summer 2020. (Committee member).

13. Ramon Manuel Martinez Maldonado, Title: Deep Learning of Clinical Relation Identification in Health Narratives. Spring 2020. (Committee member).

14. Mayukh Das, Title: Human-Allied Efficient and Effective Learning in Noisy Domains, Fall 2019. (Committee member).

15. Li Kang Chou, Title: Parameter Tying and Dissociation in Graphical Models, Summer 2019. **(Thesis Advisor)**.

16. Elmer E. Salazar, Title: NAF-Based Logic Semantics: Proof-Theoretic Generalization and Non-Ground Extension, Summer 2019. (Committee member).

17. Rittika Shamsuddin, Title: Analyzing and Synthesizing Healthcare Time Series Data for Decision-Support, Spring 2019. (Committee member).

18. Mohammed Abdelwahab, Title: Domain Adaptation for Speech Emotion Recognition, Ph.D., UTDallas, Spring 2019. (Committee member).

19. Travis R. Goodwin, Title: Medical Question Answering and Patient Cohort Retrieval, Ph.D., UTDallas, Spring 2018. (Committee member).

20. Zhou Chen, Title: Automating Disease Management Using Answer Set Programming, Ph.D., UTDallas, Fall 2017. (Committee member).

21. Najmeh Sadoughi Nourabadi, Title: Synthesizing naturalistic and meaningful speech-driven behaviors, Ph.D., UTDallas, Fall 2017. (Committee member).

22. Arvind Balasubramanian, Title: Mining patterns in sensor data for personalized healthcare, Ph.D., UTDallas, Spring 2017. (Committee member).

23. Issac Persing, Dissertation Title: Automatic Essay Analysis, Ph.D., UTDallas, Spring 2017. (Committee member).

24. David Smith, Dissertation title: Advances in Message-Passing Algorithms in Propositional and Lifted Graphical Models, Ph.D., UTDallas, Spring 2017. **(Thesis Advisor)**

25. Somdeb Sarkhel, Dissertation title: Scalable, Lifted Maximum a Posteriori Inference, Ph.D., UTDallas, Fall 2016. **(Thesis Advisor)**

26. Tahrima Rahman, Dissertation title: Scalable Learning Approaches for Sum-Product-Cutset Networks, Ph.D., UTDallas, Fall 2016. **(Thesis Advisor)**

27. Emrah Cem, Sampling and Estimation on Large Online Social Networks, Ph.D., UTDallas, Fall 2016. (Committee member)

28. Islam Beltagy, Natural Language Semantics Using Probabilistic Logic, Ph.D., UT Austin, Spring 2016. (Committee member)

29. Chen Li, Improving Summarization in the Integer Linear Programming Framework, Ph.D., UTDallas, Spring 2016. (Committee member)

30. Deepak Venugopal, Dissertation title: Scalable Inference Techniques for Markov Logic, Ph.D., UTDallas, Summer 2015. **(Thesis Advisor)**

31. Chen Chen, Beyond Entity Coreference: New Models for Resolving Zero and Event Anaphora, Ph.D., UTDallas, Fall 2015. (Committee member)

32. Kyle Marple, Dissertation title: Goal-Directed Answer Set Programming, Ph.D., UTDallas, Summer 2014. (Committee member)

33. Tatiana Erekhinskaya, Dissertation title: Probabilistic models for Text Understanding, Ph.D., UTDallas, Fall 2014 (Committee member)

34. Dong Wang, Dissertation title: Opinion summarization on spontaneous conversations, Ph.D., UTDALLAS, Spring 2013. (Committee member)

35. Kirk Roberts, Dissertation title: Processing events and spatiality in multiple text domains, Ph.D., UTDALLAS, Spring 2013. (Committee member)

36. Bryan Rink, Dissertation title: Processing linguistic relations across textual genres, Ph.D., UTDALLAS, Spring 2013. (Committee member)

37. Altaf Rahman, Dissertation title: Noun Phrase Coreference Resolution: A Knowledge-Rich, Cluster-Based Approach, Ph.D., UTDALLAS, Fall 2012. (Committee member)

38. Nima Taghipour, Dissertation title: Lifted Probabilistic Inference by Variable Elimination, Ph.D., KU Leuven, Spring 2013. (Committee member)

Masters Advisement:

1. Brij Malhotra, M.S. 2021. **(Thesis supervisor)**.

2. Srikanth Doss, M.S., 2014. **(Thesis supervisor)**.

3. Prasanna Kothalkar, M.S., 2014. **(Thesis supervisor)**.

4. Ramprasad Srinivasan. M.S., 2011. (Thesis Committee member).

5. Tatiana Erekhinskaya. M.S., 2012. (Thesis Committee member).

Doctoral Students Currently Supervising:

- Vasundhara Komaragiri, Expected Graduation date: Spring 2024
- Shivvrat Arya, Expected Graduation date: Spring 2025.
- Rohith Peddi, Expected Graduation date: Spring 2025.
- Bharath Challa, Expected Graduation date: Spring 2027.
- Likhitha Pallapothula, Expected Graduation date: Spring 2028.

Post-Doctoral Research Scientists:

- Tahrima Rahman, Summer 2017—Current.

Classroom Teaching:

Semester	Prefix	Number	Course Name
Fall 2011	CS	6V81	Statistical Methods in AI and ML
Spring 2012	CS	6375	Machine Learning
Fall 2012	CS	4365	Undergraduate Artificial Intelligence
Spring 2013	CS	6301	Statistical Methods in AI and ML
Fall 2013	CS	6375	Machine Learning
Fall 2013	CS	7301	Seminar on Deep learning and Statistical Relational Learning
Spring 2014	CS	6301	Statistical Methods in AI and ML
Fall 2014	CS	6375	Machine Learning
Spring 2015	CS	6375	Machine Learning
Fall 2015	CS	6364	Artificial Intelligence
Spring 2016	CS	7301	Advanced Machine Learning
Fall 2016	CS	6364	Artificial Intelligence
Fall 2016	CS	4365	Undergraduate Artificial Intelligence
Spring 2017	CS	7301	Advanced Machine Learning
Fall 2017	CS	4365	Undergraduate Artificial Intelligence
Spring 2018	CS	6375	Machine Learning
Fall 2019	CS	6375	Machine Learning
Spring 2020	CS	6347	Statistical Methods in AI and ML
Fall 2020	CS	6375	Machine Learning
Spring 2021	CS	6347	Statistical Methods in AI & ML
Fall 2021	CS	6375	Machine Learning
Spring 2022	CS	6347	Statistical Methods in AI & ML
Fall 2022	CS	6375	Machine Learning

Other:

- Senior Thesis Advisor: Tuan Pham, Title: Predicting Dropouts in MOOC. March 2016.
- Senior Design Project: Graduate Application Prediction. Students: Tetyana Mitrofanova, Soyeon Yun, Daniel Esponda, and Cameron Brown. Spring 2013.

Professional Service

- General Chair
  - Uncertainty in Artificial Intelligence Conference, (UAI 2020).
- Program Chair
  - Uncertainty in Artificial Intelligence Conference, (UAI 2019).
  - AAAI Workshop on Statistical Relational Artificial Intelligence, 2013.
- Track Chair

  - Distributed Machine Learning Track chair of 39th IEEE International Conference on Distributed Computing Systems (ICDCS 2019).

- Tutorials Chair
  - Uncertainty in Artificial Intelligence Conference (UAI) 2014.
- Fundraising Chair
  - AAAI Conference on Artificial Intelligence (AAAI), 2014.
- Program Committee
  - Conferences
    * International Conference on Machine Learning (ICML)- 2012, 2013, 2019.
    * Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL HLT)- 2012
    * International Joint Conference on Artificial Intelligence (IJCAI) - 2009, 2011, 2013, 2014, 2016, 2017, 2018, 2019,2020, 2021.
    * International Conference on Principles and Practice of Constraint Programming (CP) - 2007, 2008, 2012, 2013.
    * AAAI Conference on Artificial Intelligence (AAAI)- 2010, 2013, 2016, 2017, 2018, 2019,2020, 2021, 2022.
    * Uncertainty in Artificial Intelligence Conference (UAI) - 2006, 2009, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2021.
    * Neural Information Processing Systems (NeurIPS) - 2011, 2012, 2013, 2014, 2015, 2017, 2019.
    * International Symposium on Artificial Intelligence and Mathematics (ISAIM) - 2012.
  - Journals
    * Artificial Intelligence Journal (AIJ)
    * Journal of Machine Learning Research (JMLR)
    * Journal of Artificial Intelligence Research (JAIR)
    * Communications of the ACM
    * Machine Learning Journal
- Organizing Committee
  - 2016, Organized the Probabilistic Inference Competition at UAI 2016.
  - 2014, Organized the Probabilistic Inference Competition at UAI 2014.
  - 2008, Co-Organized the Probabilistic Inference Evaluation at UAI 2008.
- Department Committees
  - Intelligent Systems Group Head, 2017 and 2022.
  - TA Selection Committee, 2011, 2012, 2013, 2014, 2015, 2016, 2017, and 2018, 2019 and 2020.
  - Ph.D. Committee, 2019, 2020, 2021.
  - Graduate Curriculum Committee, 2022.