Sahil Sidheekh

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Homepage
Github Scholar

Education

Aug 2022 – May 2026 (expected) **Ph.D. in Computer Science**, *The University of Texas at Dallas*, Richardson, Texas., *Research Focus: Tractable Probabilistic Inference, Deep Generative Models..*
GPA : 4.00/4.00

Aug 2017 – May 2021 **Bachelor of Technology in Computer Science and Engineering**, *Indian Institute of Technology, Ropar*, Punjab, India.
GPA : 9.19/10.00

Work Experience

Sep 2025 - Dec 2025 **AI/ML Intern**, *Altir LLC.*
Working on developing the POC for *Cognition-DB*, a next generation enterprise AI solution that unifies diverse data modalities for knowledge driven reasoning and reliable decision making.

Aug 2023 - Aug 2025 **Research Assistant**, *The University of Texas at Dallas.*
Researching and developing foundational methodologies in exact inference using probabilistic circuits, deep generative models, and neuro-symbolic learning techniques.

Feb 2021 - April 2022 **AI/ML Resident**, *Verisk Analytics.*
Responsibilities -
(a) Conducting research on novel deep generative models for learning structured data distributions.
(b) Developing an interpretable data analytics platform, encompassing SOTA deep learning methods.

Technical Skills

Programming Languages - Python, C/C++, Java, Javascript, SQL

Frameworks & Libraries - Pytorch, Tensorflow, Latex, JAX, Pyro, Node.js, Git, Docker, Kubernetes, Linux

Research Focus - Probabilistic Circuits, Deep Generative Models, Normalizing Flows, LLMs, Variational Inference, GANs, Reliable AI, Multimodal Fusion, Meta-Learning

Publications

Conference Papers

2026 **Sahil Sidheekh***, Hrithik Suresh*, Vishnu Shreeram, Sriraam Natarajan, and Narayanan C Krishnan. Tractable sharpness-aware learning of probabilistic circuits (*pdf*). *The 40th Annual AAAI Conference on Artificial Intelligence (AAAI)*, 2026.

2025 **Sahil Sidheekh***, Pranuthi Tenali*, Saurabh Mathur*, Erik Blasch, Kristian Kersting, and Sriraam Natarajan. Credibility-aware multimodal fusion using probabilistic circuits (*pdf*). In *The 28th International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2025.

2025 **Sahil Sidheekh***, Athresh Karanam*, Saurabh Mathur*, and Sriraam Natarajan. A unified framework for human-allied learning of probabilistic circuits (*pdf*). *The 39th Annual AAAI Conference on Artificial Intelligence (AAAI)*, 2025.

2025 Sriraam Natarajan, **Sahil Sidheekh***, Saurabh Mathur*, Wolfgang Stammer, and Kristian Kersting. Human-in-the-loop or ai-in-the-loop? automate or collaborate? (*pdf*). *The 39th Annual AAAI Conference on Artificial Intelligence (AAAI)*, 2025.

2025 Debashis Gupta, Aditi Golder, **Sahil Sidheekh**, Sakib Imtiaz, Sarra Alaqahtani, Fan Yang, Greg Larsen, Miles Silman, Luis Fernendez, Robert Plemmons, Sriraam Natarajan, and V. Paul Pauca. Scalable knowledge graph construction from unstructured text: A case study on artisanal and small-scale gold mining(*pdf*). In *The 29th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD)*, 2025.

2024 **Sahil Sidheekh***, Pranuthi Tenali*, Saurabh Mathur*, Erik Blasch, and Sriraam Natarajan. On the robustness and reliability of late multi-modal fusion using probabilistic circuits (*pdf*). *The 27th International Conference on Information Fusion (FUSION)*, 2024.

2024 **Sahil Sidheekh** and Sriraam Natarajan. Building expressive and tractable probabilistic generative models: A review (*pdf*). *The 33rd International Joint Conference on Artificial Intelligence (IJCAI)*, 2024.

2023 **Sahil Sidheekh**, Kristian Kersting, and Sriraam Natarajan. Probabilistic flow circuits: towards unified deep models for tractable probabilistic inference (*pdf*). In *The 39th Conference on Uncertainty in Artificial Intelligence (UAI)*, 2023.

2022 **Sahil Sidheekh***, Chris B. Dock*, Tushar Jain, Radu Balan, and Maneesh K. Singh. Vq-flows: Vector quantized local normalizing flows (*pdf*). In *The 38th Conference on Uncertainty in Artificial Intelligence (UAI)*, 2022.

2021 **Sahil Sidheekh**, Aroof Aimen, Vineet Madan, and Narayanan C. Krishnan. On duality gap as a measure for monitoring gan training (*pdf*). In *International Joint Conference on Neural Networks (IJCNN)*, pages 1–8, 2021.

2021 **Sahil Sidheekh**, Aroof Aimen, and Narayanan C Krishnan. On characterizing gan convergence through proximal duality gap (*pdf*). In *Proceedings of the 38th International Conference on Machine Learning (ICML)*, volume 139 of *PMLR*, pages 9660–9670, 2021.

Journal Papers

2023 Duncan O'Brien, Smita Deb, **Sahil Sidheekh**, Narayanan Krishnan, and Partha S. Dutta. Ewsmethods: an r package to forecast tipping points at the community level using early warning signals and machine learning models (*pdf*). *Ecography*, 2023.

2023 Aroof Aimen, **Sahil Sidheekh**, Bharat Ladrecha, Hansin Ahuja, and Narayanan C Krishnan. Adaptation: Blessing or curse for higher-way meta-learning (*pdf*). *IEEE Transactions on Artificial Intelligence*. IEEE, 2023.

2023 Aroof Aimen, Bharat Ladrecha, **Sahil Sidheekh**, and Narayanan C Krishnan. Leveraging task variability in meta-learning (*pdf*). *SN Computer Science*, volume 4, page 539. Springer, 2023.

2022 Smita Deb, **Sahil Sidheekh**, Christopher F. Clements, Narayanan C. Krishnan, and Dutta Partha S. Machine learning methods trained on simple models can predict critical transitions in complex natural systems (*pdf*). *Royal Society Open Science*, 2022.

Workshop Papers

2025 Steven Braun, **Sahil Sidheekh**, Sriraam Natarajan, Antonio Vergari, Martin Mundt, and Kristian Kersting. Autoencoding probabilistic circuits (*pdf*). In *The Eighth Workshop on Tractable Probabilistic Modeling*, 2025.

2024 **Sahil Sidheekh***, Pranuthi Tenali*, Saurabh Mathur*, and Sriraam Natarajan. Credibility aware reliable multi-modal fusion using probabilistic circuits (*pdf*). In *The 2nd Workshop of Deployable AI (DAI), co-located at AAAI*, 2024.

2023 **Sahil Sidheekh***, Athresh Karanam*, Saurabh Mathur*, and Sriraam Natarajan. Bayesian learning of probabilistic circuits with domain constraints (*pdf*). In *The 6th Workshop on Tractable Probabilistic Modeling, co-located at UAI*, 2023.

2021 **Sahil Sidheekh***, Aroof Aimen*, Vineet Madan*, and Narayanan C. Krishnan. Stress testing of meta-learning approaches for few-shot learning (*pdf*). In *AAAI Workshop on Meta-Learning and MetaDL Challenge*, volume 140 of *PMLR*, pages 38–44, 2021.

2021 Aroof Aimen, **Sahil Sidheekh**, Bharat Ladrecha, and Narayanan C. Krishnan. Task Attended Meta-Learning for Few-Shot Learning. In *The 5th Workshop on Meta-Learning at NeurIPS (pdf)*, 2021.

Preprints

2025 Steven Braun, **Sahil Sidheekh**, Antonio Vergari, Martin Mundt, Sriraam Natarajan, and Kristian Kersting. Tractable representation learning with probabilistic circuits (*pdf*). *Under Review at TMLR*, 2025.

2021 Avideep Mukherjee, Badri N. Patro, **Sahil Sidheekh**, Maneesh Singh, and Vinay P. Namboodiri. Attentive contractive flow: Improved contractive flows with lipschitz-constrained self-attention (*pdf*). *Preprint, Under Review*, 2021.

Tutorials and Workshops Organized

Jul 2024 **Probabilistic Deep Generative Models**, IIT Madras, India.

Jan 2024 **Deep Tractable Probabilistic Models**, CODS-COMAD, Bangalore, India.
International Conference on Data Science & Management of Data

Apr 2023 **Deep Tractable Probabilistic Models**, IIT Madras, India.

Invited Talks

Jan 2024 **Building generative models that can reason probabilistically**, IIT Palakkad, India.

Service

Workflow Chair, *AAAI 2024.*

Reviewer, *UAI 2025, AAAI 2025, NeurIPS 2024, UAI 2024, UAI 2023, ECAI 2023, JAIR, Big Data.*

Honors and Achievements

2025 **NSF Student Travel Award** to attend The 39th Annual AAAI Conference on Artificial Intelligence.

2017-20 **Top Class Merit Award**, *IIT Ropar* (awarded to the top 7% students)

2016 **Best Outgoing Student**, *MES Indian School*, Doha-Qatar

Teaching Assistantships

Spring, 2023 **CS4337 - Programming Languages and Paradigms**, UT Dallas.

Fall, 2022 **CS4337 - Programming Languages and Paradigms**, UT Dallas.

Spring, 2021 **CS503 - Machine Learning**, IIT Ropar.