Siddarth Asokan

No. 21, 3rd Main, 2nd Cross, MSH Layout 2nd Stage
Anandnagar, Bengaluru - 560024, Karnataka, India
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EXPERIENCE

Senior Researcher *2025 (Aug) – Current*
Research Engineer *2023 (Nov) – 2025 (Aug)*
Microsoft Research Lab, India *(MSRI)*
Vigyan, No. 9, Lavelle Road, Bengaluru

- **Areas of research:** Large-scale Information Search and Retrieval, Extreme Classification, Generative modeling

Project Associate *2023 (Aug – Oct)*
Spectrum Lab, Department of Electrical Engineering
Indian Institute of Science, Bengaluru

- **Group Lead:** Prof. Chandra Sekhar Seelamantula
- **Areas of research:** Langevin diffusion models, Fourier analysis, Discriminator Guidance in Score-based Diffusion

ACADEMIC BACKGROUND

Doctor of Philosophy (Ph.D.) *2017 – 2023*
(***Thesis Defended***: *September 15th, 2023*) GPA: 9.80/10
Robert Bosch Center for Cyber-Physical Systems *(RBCCPS)*
Indian Institute of Science *(IISc.)*, Bengaluru

- **Thesis Title:** On the Optimality of Generative Adversarial Networks — A Variational Perspective
- **Areas of research:** Generative modeling, Generative adversarial networks, Langevin diffusion models, High-dimensional Interpolation, Variational Calculus, Fourier analysis, Learning in Low-data Regimes, Transfer Learning
- Also awarded **Masters of Technology (M. Tech.) (Research)** Degree.
- **Supervisor:** Prof. Chandra Sekhar Seelamantula
- **Selected coursework:** Linear and Non-linear Optimization, Image Processing, Machine Learning for Signal Processing, Pattern Recognition, Reinforcement Learning, Autonomous Navigation, Stochastic Approximation Algorithms, Dynamics of Linear Systems

Bachelor of Engineering (B.E.) *2013 – 2017*
(Electronics and Communication Engineering) GPA: 9.96/10
M. S. Ramaiah Institute of Technology *(MSRIT)*, Bengaluru,

- **Rank**: University 1st Rank, Gold Medal
- **Project Title:** Smart Parking and Surveillance
- **Selected coursework:** Linear Algebra, Probability Theory, Numerical Methods, Signals and Systems, Digital Signal Processing, Information Theory

INTERNSHIP

B.E. Project Intern 2016 – 2017
Robert Bosch Center for Cyber-Physical Systems, IISc. Bangalore

- **Project Title:** Image Processing and Networking for Smart City Applications
- **Supervisors:** Prof. Bharadwaj Amrutur and Dr. Abhay Sharma

ACCOLADES

Fellowships

- Super Winner – Qualcomm Innovation Fellowship (All-India competitive) 2023
- Winner – Qualcomm Innovation Fellowship (All-India competitive) 2022
- Winner – RBCCPS Ph.D. Fellowship (Institute competitive) 2021
- Winner – Qualcomm Innovation Fellowship (All-India competitive) 2021
- Winner – RBCCPS Ph.D. Fellowship (Institute competitive) 2020
- Finalist – Qualcomm Innovation Fellowship (All-India competitive) 2020
- Winner – Qualcomm Innovation Fellowship (All-India competitive) 2019
- Winner – Microsoft Research (MSR) Ph.D. Fellowship (Institute Selective) 2018

Awards

- Indian Unit on Pattern Recognition and AI Doctoral Dissertation Award 2024
- IEI Young Engineer's Award (in Computer Science) 2024 – 25 2024
- Prof. Satish Dhawan Research Award 2023 2024
- Selected for British Machine Vision Conference Doctoral Consortium 2023
- Best Presenter – 14th IISc EECS Symposium – AI/ML Track 2023
- Gold Medal – B.E. (Highest Cumulative GPA - MSRIT, Class of 2017) 2017
- Runners up – Best Project (MSRIT, Class of 2017) 2017
- Finalist – Quest Global INGENIUM Competition (All-India – Top 10) 2017
- Runners up – Ideathon (IISc – MSRIT Symposium on Smart Cities) 2017
- College 2nd Rank – M.E.S. Pre-university College (State 10th Rank) 2013
- School 2nd Rank – Poorna Prajna Education Center (State 11th Rank) 2011

PROFESSIONAL ACTIVITIES

Talks

1. **"Building Frontier Large Retrieval Models,"** *Microsoft Research Academic Summit,* MSR, **June 26, 2025**.
2. **"Extreme Classification and Retrieval – Current and Future Trends,"** Invited talk at *The 15th IISc Division of Electrical, Electronics and Computer Science (EECS) Student Research Symposium 2023,* IISc, **April 5, 2024**.
3. **"On the Optimality of GANs – A Variational Perspective,"** *BMVC Doctoral Consortium 2023*, Aberdeen, UK, **November 23, 2023**.
4. **"Demystifying Generative AI – From Generative Adversarial Networks to Diffusion Models,"** *EE Summer School (EESS) 2023*, Electrical Engineering Department, IISc, **July 5, 2023**.
5. **"The Optimality of Gradient-regularized GANs – Theory and Practice,"** *The 14th IISc Division of Electrical, Electronics and Computer Science (EECS) Student Research Symposium 2023,* IISc, **April 3, 2023**.
6. **"Demystifying the Optimal Generator in GANs,"** *Qualcomm Innovation Fellowship 2022 – Mid-term Presentation, (Virtual)*, **February 20, 2023**.
7. **"An Introduction to GANs and Diffusion Models,"** *EE Summer School 2022*, Electrical Engineering Department, IISc, **July 7, 2022**.
8. **"Teaching a GAN What Not to Learn,"** *The 13th IISc EECS Student Research Symposium,*, IISc, **April 3, 2022**
9. **"The Optimal Discriminator in GANs,"** *Qualcomm Innovation Fellowship 2021, (Virtual)*, **January 31, 2022**.

10. **"Teaching a GAN What Not to Learn,"** *The ACM India Joint International Conference on Data Science and Management of Data (CODS-COMAD), Premier Paper Track, (Virtual),* **January 4, 2021**.
11. **"ELeGANt - Euler-Lagrange Constraints for Generative Adversarial Networks,"** *Qualcomm Innovation Fellowship 2019*, Qualcomm, Bengaluru, **January 31, 2020**.

Refereed Publications

- Conferences: ICIP, ICASSP, AAAI, CVPR, NeurIPS, ICLR, ICML
- Journals: TMLR, TNNLS, TPAMI, TIP

TEACHING

Teaching Assistant at IISc.

- E9-241 – Digital Image Processing August–December 2019
- E9-241(O) – Digital Image Processing (Online) Aug–Dec 2021, 2022, 2023

PUBLICATIONS

Google Scholar

Journal Publications

[**J1**] **S. Asokan** and C. S. Seelamantula, "Euler-Lagrange Analysis of Generative Adversarial Networks," *Journal of Machine Learning Research* ***(JMLR)***, 1–100, 2023 (Link)

Conference Publications

[**C1**] S. C. Prabhu, B. Singh, A. Mittal, S. Asokan, S. Mohan, D. Saini, Y. Prabhu, L. Kumar, J. Jiao, A. Singh, N. Tandon, M. Gupta, S. Agarwal, and M. Varma, "MOGIC: Metadata-infused Oracle Guidance for Improved Extreme Classification," *In Proceedings of the 42nd International Conference on Machine Learning* ***(ICML) 2025***, Vancouver, Canada. (Link)

[**C2**] A. Mittal, S. Mohan, D. Saini, **S. Asokan**, S. C. Prabhu, L. Kumar, P. Malhotra, J. Jiao, A. Singh, S. Agarwal, S. Chakrabarti, P. Kar, and M. Varma, "Graph Regularized Encoder Training for Extreme Classification," *In Companion Proceedings of the ACM on The Web Conference* ***(The WebConf) 2025***, Sydney, Australia (Link)

[**C3**] S. Yadav, D. Saini, A. Buvanesh, B. Paliwal, K. Dahiya, **S. Asokan**, Y. Prabhu, J. Jiao and M. Varma, "Extreme Meta-Classification for Large-Scale Zero-Shot Retrieval," *In Proceedings of the 30th ACM SIGKDD Conference on Knowledge Discovery and Data Mining* ***(KDD) 2024***, Barcelona, Spain (Link)

[**C4**] N. Shetty, M. Bandla, N. Neema, **S. Asokan** and C. S. Seelamantula, "Momentum-imbued Langevin Dynamics (MILD) for Faster Sampling," *In Proceedings of the IEEE International Conference on Acoustics, Speech and Signal Processing* ***(ICASSP) 2024***, Seoul, Korea (Link)

[**C5**] A. S. Bhandiwad, A. J. Kamath, **S. Asokan** and C. S. Seelamantula, "Variational Analysis of Adversarial Regularization for Solving Inverse Problems," *In Proceedings of the IEEE International Conference on Acoustics, Speech and Signal Processing* ***(ICASSP) 2024***, Seoul, Korea **(Oral Presentation)** (Link)

[**C6**] **S. Asokan** and C. S. Seelamantula, "Spider GAN: Leveraging Friendly Neighbors to Accelerate GAN Training," *In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition* ***(CVPR) 2023***, Vancouver, Canada (Link)

[**C7**] **S. Asokan**, F. S. Mohammed and C. S. Seelamantula, "A Game of Snakes and GANs," *In Proceedings of the IEEE International Conference on Acoustics, Speech and Signal Processing* ***(ICASSP) 2023***, Rhodes Island, Greece **(Oral Presentation)** (Link)

[**C8**] **S. Asokan** and C. S. Seelamantula, "Teaching a GAN What Not to Learn," *In Advances in Neural Information Processing Systems* ***(NeurIPS) 2020***, Vancouver, Canada (Link)

Workshop Publications

[**W1**] **S. Asokan**, N. Shetty, A. Srikanth and C. S. Seelamantula, "FoLD: Fourier-series-based Score Estimation for Langevin Diffusion," In *First Workshop on Efficient and On-Device Generation* ***(EDGE)*** *at* ***CVPR 2024***.

[**W2**] **S. Asokan**, N. Shetty, A. Srikanth and C. S. Seelamantula, "f-GANs Settle Scores!," *In The "Workshop on Diffusion Models" at* ***NeurIPS 2023***, (Link)

[**W3**] **S. Asokan** and C. S. Seelamantula, "ELeGANt: Euler-Lagrange Analysis of Wasserstein Generative Adversarial Networks," *In "DLDE - III" at* ***NeurIPS Workshops 2023***, New Orleans, USA (**Spotlight Presentation**) (Link)

[**W4**] **S. Asokan** and C. S. Seelamantula, "LSGANs with gradient regularizers are smooth high-dimensional interpolators," *In "INTERPOLATE: First Workshop on Interpolation and Beyond" at* ***NeurIPS Workshops 2022***, New Orleans, USA (Link)

[**W5**] **S. Asokan** and C. S. Seelamantula, "Bridging the Gap Between Coulomb GAN and Gradient-regularized WGAN," *In "The Symbiosis of Deep Learning and Differential Equations (DLDE) - II" at* ***NeurIPS Workshops 2022***, New Orleans, USA (**Spotlight Presentation**) (Link)

Preprints and Manuscripts Under Review

[**P1**] A. Srikanth*, **S. Asokan***, N. Shetty, and C. S. Seelamantula, "Insights into Closed-form IPM-GAN Discriminator Guidance for Diffusion Modeling," *arXiv preprints, arXiv:2306.00785,* ***(arXiv) 2023,*** (Link)

[**P2**] **S. Asokan** and C. S. Seelamantula, "The Optimal Discriminator in Higher-order Gradient-regularized Generative Adversarial Networks (GANs)," Manuscript **under review at** the SIAM Journal on The Mathematics of Data Science **(SIAM SIMODS)** (arXiv:2306.01654)

SKILLS

Programming Languages and Libraries

- Python: *NumPy, SciPy, TensorFlow (1.0 and 2.0), Keras, PyTorch,*
- Others: C, C++, MATLAB

Documentation: LaTeX, Markdown

REFEREES

◎ *Prof. Chandra Sekhar Seelamantula*
Professor, Department of Electrical Engineering, IISc.
`css@iisc.ac.in`

◎ *Dr. Manik Varma*
Distinguished Scientist & VP, Microsoft Research Lab, India
`manik@microsoft.com`