

Siddarth Asokan

No. 21, 3rd Main, 2nd Cross, MSH Layout 2nd Stage
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- EXPERIENCE**
- Research Software Development Engineer II** 2023 (Nov) – Current
[Microsoft Research Lab, India \(MSRI\)](#)
Vigyan, No. 9, Lavelle Road, Bengaluru
- ⊙ **Group Lead:** [Dr. Manik Varma](#)
 - ⊙ **Areas of research:** [Extreme Classification](#), Generative modeling, Information Search and Retrieval
- 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, High-dimensional Interpolation, Variational Calculus, 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 along with the Ph.D. 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

- ⊙ Prof. Satish Dhawan Research Award 2023 2024
- ⊙ 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. **“On the Optimality of GANs – A Variational Perspective,”** *BMVC Doctoral Consortium 2023*, Aberdeen, UK, **November 23, 2023.** 
2. **“Demystifying Generative AI – From Generative Adversarial Networks to Diffusion Models,”** *EE Summer School (EESS) 2023*, Electrical Engineering Department, IISc, **July 5, 2023.**
3. **“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.**
4. **“Demystifying the Optimal Generator in GANs,”** *Qualcomm Innovation Fellowship 2022 – Mid-term Presentation, (Virtual)*, **February 20, 2023.**
5. **“An Introduction to GANs and Diffusion Models,”** *EE Summer School 2022*, Electrical Engineering Department, IISc, **July 7, 2022.**
6. **“Teaching a GAN What Not to Learn,”** *The 13th IISc EECS Student Research Symposium,, IISc*, **April 3, 2022**
7. **“The Optimal Discriminator in GANs,”** *Qualcomm Innovation Fellowship 2021 – Mid-term Presentation, (Virtual)*, **January 31, 2022.**
8. **“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.** 


9. “ELeGANt - Euler-Lagrange Constraints for Generative Adversarial Networks,” *Qualcomm Innovation Fellowship 2019 – Mid-term Presentation*, Qualcomm, Bengaluru, **January 31, 2020**.

Refereed Publications



- ⊙ Advances in Neural Information Processing Systems (NeurIPS) 2021 – present
- ⊙ Intl. Conf. on Acoustics, Speech, Signal Processing (ICASSP) 2021 – present
- ⊙ International Conference on Learning Representations (ICLR) 2021 – present
- ⊙ International Conference on Machine Learning (ICML) 2021 – present
- ⊙ International Conference on Image Processing. (ICIP) 2019, 2020

PUBLICATIONS *Journal Publications*

[GOOGLE SCHOLAR](#)


- [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] 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*, to be held in Seoul, Korea
- [C2] 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*, to be held in Seoul, Korea
- [C3] **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](#)) 
- [C4] **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](#)) 
- [C5] **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, “ f -GANs Settle Scores!,” *In The “Workshop on Diffusion Models” at NeurIPS 2023*, ([Link](#))
- [W2] **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](#))
- [W3] **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](#))

- [W4] **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] **S. Asokan**, N. Shetty, A. Srikanth and C. S. Seelamantula, “GANs Settle Scores!,” *arXiv preprints*, *arXiv:2306.00785*, (**arXiv**) **2023**, ([Link](#))
- [P2] **S. Asokan** and C. S. Seelamantula, “Data Interpolants – That’s What Discriminators in Higher-order Gradient-regularized GANs Are,” *arXiv preprints*, *arXiv:2306.01654*, (**arXiv**) **2023**, ([Link](#))
- [P3] **S. Asokan**, N. Shetty, A. Srikanth and C. S. Seelamantula, “FoLD: Fourier-series-based Score Estimation for Langevin Diffusion,” *Under Review*.

SKILLS

Programming Languages and Libraries

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

Documentation

- ⊙ L^AT_EX
- ⊙ Markdown

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

REFEREES

- ⊙ *Prof. Chandra Sekhar Seelamantula*
Professor, Department of Electrical Engineering, IISc.
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- ⊙ *Prof. Bharadwaj Amrutur*
Chair, Robert Bosch Center for Cyber-Physical Systems, IISc.
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- ⊙ *Prof. P. S. Sastry*
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- ⊙ *Prof. Shalabh Bhatnagar*
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