Siddarth Asokan

No. 21, 3rd Main, 2nd Cross, MSH Layout 2nd Stage
Anandnagar, Bengaluru - 560024, Karnataka, India
Contact: ◉ WEBSITE | 🎓 GOOGLE SCHOLAR | ○ GITHUB
Email: siddarth.asokan@microsoft.com | siddarth.asokan@gmail.com

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

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. **"Extreme Classification and Retrieval – Current and Future Trends,"** *The 15th IISc Division of Electrical, Electronics and Computer Science (EECS) Student Research Symposium 2023,* IISc, **April 5, 2024**.

2. **"On the Optimality of GANs − A Variational Perspective,"** *BMVC Doctoral Consortium 2023*, Aberdeen, UK, **November 23, 2023**. ▶

3. **"Demystifying Generative AI – From Generative Adversarial Networks to Diffusion Models,"** *EE Summer School (EESS) 2023*, Electrical Engineering Department, IISc, **July 5, 2023**.

4. **"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**.

5. **"Demystifying the Optimal Generator in GANs,"** *Qualcomm Innovation Fellowship 2022 – Mid-term Presentation, (Virtual)*, **February 20, 2023**.

6. **"An Introduction to GANs and Diffusion Models,"** *EE Summer School 2022*, Electrical Engineering Department, IISc, **July 7, 2022**.

7. **"Teaching a GAN What Not to Learn,"** *The 13th IISc EECS Student Research Symposium,*, IISc, **April 3, 2022**

8. **"The Optimal Discriminator in GANs,"** *Qualcomm Innovation Fellowship 2021 – Mid-term Presentation, (Virtual)*, **January 31, 2022**.

9. **"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**. ▶️

10. **"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

[**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. 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*, to be held in Barcelona, Spain

[**C2**] 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)

[**C3**] 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)

[**C4**] **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) ▶️

[**C5**] **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) ▶️

[**C6**] **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**] **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)

SKILLS

Programming Languages and Libraries
◉ Python: *NumPy, SciPy, TensorFlow (1.0 and 2.0), Keras, PyTorch,*
◉ Others: C, C++, MATLAB

Documentation
◉ LaTeX
◉ 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.
css@iisc.ac.in

◉ *Prof. Bharadwaj Amrutur*
Chair, Robert Bosch Center for Cyber-Physical Systems, IISc.
Professor, Department of Electrical Communication Engineering, IISc.
amrutur@iisc.ac.in

◉ *Prof. P. S. Sastry*
Professor, Department of Electrical Engineering, IISc.
sastry@iisc.ac.in

◉ *Prof. Shalabh Bhatnagar*
Professor, Department of Computer Science and Automation, IISc.
shalabh@iisc.ac.in