

Siddarth Asokan

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ACADEMIC BACKGROUND	Doctor of Philosophy (Ph.D.) (Thesis Submitted: May 10th, 2023) (Thesis Defense (Expected): September 2023) Robert Bosch Center for Cyber-Physical Systems (RBCCPS) Indian Institute of Science (IISc.) , Bengaluru	2017 – (2023) <u>GPA: 9.80/10</u>
	<ul style="list-style-type: none">⊙ 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⊙ Will be awarded Masters of Technology (M. Tech.) (Research) Degree along with 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.) (Electronics and Communication Engineering) M. S. Ramaiah Institute of Technology (MSRIT) , Bengaluru,	2013 – 2017 <u>GPA: 9.98/10</u>
	<ul style="list-style-type: none">⊙ 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 Robert Bosch Center for Cyber-Physical Systems , IISc. Bangalore	2016 – 2017
	<ul style="list-style-type: none">⊙ Project Title: Image Processing and Networking for Smart City Applications⊙ Supervisors: Prof. Bharadwaj Amrutur and Dr. Abhay Sharma	
ACCOLADES	Fellowships <ul style="list-style-type: none">⊙ Super Winner – Top 25% of Qualcomm Innovation Fellowship 22 Winners 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

- ⊙ 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 (National – 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 1st Rank – [Poorna Prajna Education Center](#) (State 11th Rank) 2011

PUBLICATIONS *Journal Publications*

[GOOGLE SCHOLAR](#)

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

Conference Articles

5. **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](#))
4. **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](#))
3. **S. Asokan** and C. S. Seelamantula, “LSGANs with gradient regularizers are smooth high-dimensional interpolators”, *In Proceedings on “INTERPOLATE: First Workshop on Interpolation and Beyond” at NeurIPS Workshops 2022*, New Orleans, United States of America ([Link](#))
2. **S. Asokan** and C. S. Seelamantula, “Bridging the Gap Between Coulomb GAN and Gradient-regularized WGAN”, *In Proceedings on “The Symbiosis of Deep Learning and Differential Equations (DLDE) - II” at NeurIPS Workshops 2022*, New Orleans, United States of America (**Spotlight Presentation**) ([Link](#))
1. **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](#))

Preprints (under double-blind review)

2. **S. Asokan**, N. Shetty, A. Srikanth and C. S. Seelamantula, “GANs Settle Scores!”, *arXiv preprints, arXiv:2306.00785, (arXiv) 2023*, ([Link](#))
1. **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:** *Python, C, C++, MATLAB*
- ⊙ **Libraries:** *NumPy, SciPy, TensorFlow (1.0 and 2.0), TF-Keras, PyTorch*
- ⊙ **Documentation:** *L^AT_EX, Markdown*

PROFESSIONAL ACTIVITIES *Invited Talks*

8. “Demystifying Generative AI – From Generative Adversarial Networks to Diffusion Models”, *EE Summer School (EESS) 2023*, Electrical Engineering Department, IISc, **July 5, 2023**
7. “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 Generative Adversarial Networks,”, *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**
4. “Teaching a GAN What Not to Learn”, *The 13th IISc Division of Electrical, Electronics and Computer Science (EECS) Student Research Symposium,, IISc*, **April 3, 2022**
3. “The Optimal Discriminator in GANs,”, *Qualcomm Innovation Fellowship 2021 – Mid-term Presentation, (Virtual)*, **January 31, 2022**
2. “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**
1. “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

TEACHING *Teaching Assistant at IISc.*

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

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`