

# Siddarth Asokan

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**ACADEMIC BACKGROUND**     *Doctor of Philosophy (Ph.D.)*     2017 – (2023)  
(*Thesis Submitted: May 10th, 2023*)     GPA: 9.80/10  
(*Thesis Defense (Expected): September 2023*)

[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
- ⊙ 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.)*     2013 – 2017  
(*Electronics and Communication Engineering*)     GPA: 9.98/10

[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

- ⊙ 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

### 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*

1. **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](#))
2. **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, USA ([Link](#))
4. **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, USA (**Spotlight Presentation**) ([Link](#))
5. **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)*

1. **S. Asokan**, N. Shetty, A. Srikanth and C. S. Seelamantula, “GANs Settle Scores!,” *arXiv preprints, arXiv:2306.00785, (arXiv) 2023*, ([Link](#))
2. **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<sup>A</sup>T<sub>E</sub>X, Markdown*

**PROFESSIONAL ACTIVITIES** *Talks*

1. **“On the Optimality of GANs – A Variational Perspective,”** *BMVC Doctoral Consortium 2023*, Aberdeen, United Kingdom, (**Upcoming**)
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**

**TEACHING**

*Teaching Assistant at IISc.*

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

*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

**REFEREES**

- ⊙ *Prof. Chandra Sekhar Seelamantula*  
Professor, Department of Electrical Engineering, IISc.  
[css@iisc.ac.in](mailto: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](mailto:amrutur@iisc.ac.in)
- ⊙ *Prof. P. S. Sastry*  
Professor, Department of Electrical Engineering, IISc.  
[sastry@iisc.ac.in](mailto:sastry@iisc.ac.in)
- ⊙ *Prof. Shalabh Bhatnagar*  
Professor, Department of Computer Science and Automation, IISc.  
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