

# Siddarth Asokan

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ACADEMIC BACKGROUND	<b>Doctor of Philosophy (Ph.D.)</b> (Thesis Submitted: May 10th, 2023) (Thesis Defense (Expected): September 2023) <a href="#">Robert Bosch Center for Cyber-Physical Systems (RBCCPS)</a> <a href="#">Indian Institute of Science (IISc.)</a> , Bengaluru	2017 – (2023) <u>GPA: 9.80/10</u>
	<ul style="list-style-type: none"><li>⊙ <b>Thesis Title:</b> On the Optimality of Generative Adversarial Networks — A Variational Perspective</li><li>⊙ <b>Areas of research:</b> Generative modeling, Generative adversarial networks, Langevin diffusion models, High-dimensional Interpolation, Variational Calculus, Fourier analysis</li><li>⊙ Will be awarded Masters of Technology (M. Tech.) (Research) Degree along with Ph.D. Degree.</li><li>⊙ <b>Supervisor:</b> <a href="#">Prof. Chandra Sekhar Seelamantula</a></li><li>⊙ <b>Selected coursework:</b> 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</li></ul>	
	<b>Bachelor of Engineering (B.E.)</b> (Electronics and Communication Engineering) <a href="#">M. S. Ramaiah Institute of Technology (MSRIT)</a> , Bengaluru,	2013 – 2017 <u>GPA: 9.98/10</u>
	<ul style="list-style-type: none"><li>⊙ <b>Rank:</b> University 1st Rank, Gold Medal</li><li>⊙ <b>Project Title:</b> Smart Parking and Surveillance</li><li>⊙ <b>Selected coursework:</b> Linear Algebra, Probability Theory, Numerical Methods, Signals and Systems, Digital Signal Processing, Information Theory</li></ul>	
INTERNSHIP	<b>B.E. Project Intern</b> <a href="#">Robert Bosch Center for Cyber-Physical Systems</a> , IISc. Bangalore	2016 – 2017
	<ul style="list-style-type: none"><li>⊙ <b>Project Title:</b> Image Processing and Networking for Smart City Applications</li><li>⊙ <b>Supervisors:</b> <a href="#">Prof. Bharadwaj Amrutur</a> and <a href="#">Dr. Abhay Sharma</a></li></ul>	
ACCOLADES	<b>Fellowships</b> <ul style="list-style-type: none"><li>⊙ Super Winner – Top 25% of Qualcomm Innovation Fellowship 22 Winners 2023</li><li>⊙ Winner – Qualcomm Innovation Fellowship (All India Competitive) 2022</li><li>⊙ Winner – RBCCPS Ph.D. Fellowship (Institute Competitive) 2021</li><li>⊙ Winner – Qualcomm Innovation Fellowship (All India Competitive) 2021</li><li>⊙ Winner – RBCCPS Ph.D. Fellowship (Institute Competitive) 2020</li><li>⊙ Finalist – Qualcomm Innovation Fellowship (All India Competitive) 2020</li><li>⊙ Winner – Qualcomm Innovation Fellowship (All India Competitive) 2019</li><li>⊙ Winner – Microsoft Research (MSR) Ph.D. Fellowship (Institute Selective) 2018</li></ul>	

## 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<sup>A</sup>T<sub>E</sub>X, 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.  
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