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)**: August 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 – 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
- 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

GOOGLE SCHOLAR

Journal Publications

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 and Libraries

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

Documentation

- LaTeX
- 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,* ECE Department, 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,*, ECE Department, IISc, **April 3, 2022**
3. **"Optimal Discriminator in Generative Adversarial Networks,"**, *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
- E9-241(O) – Digital Image Processing (Online) August-December 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. Shalabh Bhatnagar*
  Professor, Department of Computer Science and Automation, IISc.
  `shalabh@iisc.ac.in`