Abijith Jagannath Kamath

PhD Student, Department of Electrical Engineering
Indian Institute of Science, Bengaluru

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EDUCATION

Indian Institute of Science (IISc.), Bengaluru, India — 2020 – present
PhD in Electrical Engineering — CGPA: 8.90/10
Department of Electrical Engineering (EE)

Thesis Title: Neuromorphic Sampling — Theory and Applications

National Institute of Technology Karnataka (NITK), Surathkal, India — 2015 – 2019
Bachelor of Technology in Electrical and Electronics Engineering — CGPA: 9.17/10
Department of Electrical and Electronics Engineering

Project Title: Signals, Shapes and Fourier Descriptors

EXPERIENCE

Spectrum Lab, EE IISc., Bengaluru, India — 2019
Project Assistant

Project Title: Neuromorphic Sampling

AWARDS AND PROFESSIONAL ACTIVITIES

- Awards
  - Ministry of Education, Government of India *Prime Minister's Research Fellowship* — 2020 – 25
  - Department of Electrical Engineering, IISc. *Outstanding Teaching Assistant Award* — 2024
  - Qualcomm *Innovation Fellowship* India — 2025
- Professional Activities (selected)
  - *Vice-Chair*, IEEE IISc. *SPS* Student Chapter — 2020 – 21
  - *Student Branch Secretary*, IEEE NITK Student Branch — 2018 – 19
  - Reviewer at *IEEE Access, IEEE Comm. Lett., Elsevier Signal Processing IEEE ICASSP, IEEE SPCOM, SampTA, Asilomar*

TEACHING

- E9 310 Computational Imaging — 2024
- E9 222 Signal Processing in Practice — 2023
- E9 241o Digital Image Processing — 2022 – 23
- E9 213 Time-Frequency Analysis — 2021 – 23

REFEREES

Prof. Chandra Sekhar Seelamantula — *PhD Research Supervisor*
Professor, Department of Electrical Engineering, — ✉ css@iisc.ac.in
Indian Institute of Science — 🌐 Webpage | 🎓 Google Scholar

Prof. CMC Krishnan — *Project Supervisor*
Associate Professor, Department of Electrical and Electronics Engineering — ✉ cmckrishnan@nitk.edu.in
National Institute of Technology Karnataka — 🎓 Google Scholar

PUBLICATIONS

Journal Articles

2. **A. J. Kamath**, S. B. Patil, and C. S. Seelamantula, "DeepFRI: A deep plug-and-play technique for finite-rate-of-innovation signal reconstruction," *IEEE Trans. Signal Process.*, vol. 73, pp. 2998–3013, 2025. DOI: 10.1109/TSP.2025.3589394

1. K. K. R. Nareddy, **A. J. Kamath**, and C. S. Seelamantula, "Tight-frame-like analysis-sparse recovery using non-tight sensing matrices," *SIAM J. Imag. Sci.*, 2024. DOI: 10.1137/23M1625846

Preprints

3. **A. J. Kamath** and C. S. Seelamantula, "Neuromorphic sampling of sparse signals," 2023. arXiv: 2310.15750 [eess.SP]. [Online]. Available: https://arxiv.org/abs/2310.15750

2. **A. J. Kamath** and C. S. Seelamantula, "Neuromorphic sampling of signals in shift-invariant spaces," 2023. arXiv: 2306.05103 [eess.SP]. [Online]. Available: https://arxiv.org/abs/2306.05103

1. **A. J. Kamath**, S. Rudresh, and C. S. Seelamantula, "Time encoding of finite-rate-of-innovation signals," 2021. arXiv: 2107.03344 [eess.SP]. [Online]. Available: https://arxiv.org/abs/2107.03344

Conference Articles

10. **A. J. Kamath** and C. S. Seelamantula, "Neuromorphic unlimited sampling for high-dynamic-range video acquisition," in *IEEE Int. Conf. Acoust., Speech, Signal Process. (ICASSP)*, invited paper, 2025. DOI: 10.1109/ICASSP49660.2025.10889295

9. **A. J. Kamath**, A. S. Bhandiwad, and C. S. Seelamantula, "On the design of weakly-convex regularizers for solving linear inverse problems," in *IEEE Int. Conf. Acoust., Speech, Signal Process. (ICASSP)*, 2025. DOI: 10.1109/ICASSP49660.2025.10889256

8. **A. J. Kamath**, K. K. R. Nareddy, and C. S. Seelamantula, "Method of alternating proximations for solving linear inverse problems," in *Proc. IEEE Int. Conf. Signal Process. Comm. (SPCOM)*, 2024. DOI: 10.1109/SPCOM60851.2024.10631653

7. **A. J. Kamath** and C. S. Seelamantula, "Neuromorphic sensing meets unlimited sampling," in *Proc. IEEE Int. Conf. Acoust., Speech, Signal Process. (ICASSP)*, 2024. DOI: 10.1109/ICASSP48485.2024.10447840

6. K. K. R. Nareddy, **A. J. Kamath**, and C. S. Seelamantula, "Image restoration with generalized ℓ_2 loss and convergent plug-and-play prior," in *Proc. IEEE Int. Conf. Acoust., Speech, Signal Process. (ICASSP)*, 2024. DOI: 10.1109/ICASSP48485.2024.10446244

5. A. S. Bhandiwad, **A. J. Kamath**, S. Asokan, and C. S. Seelamantula, "Variational analysis of adversarial regularization for solving inverse problems," in *Proc. IEEE Int. Conf. Acoust., Speech, Signal Process. (ICASSP)*, 2024. DOI: 10.1109/ICASSP48485.2024.10446385

4. **A. J. Kamath** and C. S. Seelamantula, "Multichannel time-encoding of finite-rate-of-innovation signals," in *Proc. IEEE Int. Conf. Acoust., Speech, Signal Process. (ICASSP)*, 2023. DOI: 10.1109/ICASSP49357.2023.10096150

3. **A. J. Kamath** and C. S. Seelamantula, "Differentiate-and-fire time-encoding of finite-rate-of-innovation signals," in *Proc. IEEE Int. Conf. Acoust., Speech, Signal Process. (ICASSP)*, 2022. DOI: 10.1109/ICASSP43922.2022.9746159

2. S. Rudresh, **A. J. Kamath**, and C. S. Seelamantula, "A time-based sampling framework for finite-rate-of-innovation signals," in *Proc. IEEE Int. Conf. Acoust., Speech, Signal Process. (ICASSP)*, 2020, pp. 5585–5589. DOI: 10.1109/ICASSP40776.2020.9053120

1. **A. J. Kamath**, S. Rudresh, and C. S. Seelamantula, "FRI modelling of Fourier descriptors," in *Proc. IEEE Int. Conf. Acoust., Speech, Signal Process. (ICASSP)*, 2019, pp. 5092–5096. DOI: 10.1109/ICASSP.2019.8682685

Talks and Demonstrations

5. A. Prabakar, A. S. Bhandiwad, **A. J. Kamath**, and C. S. Seelamantula, "Weakly-convex regularizers for magnetic resonance imaging," in *Int. Symp. Comput. Sensing (ISCS)*, 2025. [Online]. Available: `https://arxiv.org/abs/2508.14438`

4. S. Kulur, D. Balasubramanian, **A. J. Kamath**, and C. S. Seelamantula, *Neuromorphic unlimited sampling beyond bandlimited signals*, IEEE Int. Conf. Acoust., Speech, Signal Process. (ICASSP), Show-and-tell Demo, 2025

3. S. S. Yadav, K. S. Akash, A. J. Kamath, C. S. Seelamantula, and C. S. Thakur, "Neuromorphic radar for gesture recognition," in *IEEE ICASSP Show-and-tell Demo*, 2025

2. S. Kulur, S. Anand, **A. J. Kamath**, S. S. Yadav, C. S. Thakur, and C. S. Seelamantula, *Modulo sampling meets neuromorphic encoding — A hardware proof*, IEEE Int. Conf. Acoust., Speech, Signal Process. (ICASSP), Show-and-tell Demo, 2024

1. **A. J. Kamath** and C. S. Seelamantula, "Neuromorphic sampling," in *Asilomar Conf. Signals Syst. Comput. (ACSSCS)*, 2021

PATENTS

1. S. Kulur, S. Anand, **A. J. Kamath**, S. S. Yadav, C. S. Thakur, and C. S. Seelamantula, *A neuromorphic unlimted sampling method and a plug-and-play system thereof*, Indian Patent 202441018543 (in process), 2024