

Chandra Sekhar Seelamantula

List of publications (last updated August 2, 2017)

Book chapter

1. C. S. Seelamantula, "OperA: Operator based annihilation for finite-rate-of-innovation signal sampling and reconstruction," Recent Advances in Sampling Theory and Applications, Springer.

arXiv preprints:

1. S. Mukherjee, R. Deepak, H. Chen, A. Veeraraghavan, and C. S. Seelamantula, "Online reweighted least-squares (ORLS) algorithm for sparse recovery and application to short-wave infrared imaging," <https://arxiv.org/abs/1706.09585>
2. D. Mahapatra, S. Mukherjee, and C. S. Seelamantula, "Deep sparse coding using optimized linear expansion of thresholds," <https://arxiv.org/pdf/1705.07290.pdf>
3. J. Sadasivan, S. Mukherjee, and C. S. Seelamantula, "Signal denoising using the minimum-probability-of-error criterion," <https://arxiv.org/pdf/1702.07869.pdf>
4. S. Mukherjee, A. K. Sekuboyina, and C. S. Seelamantula, "Super-resolution from binary measurements with unknown threshold," <https://arxiv.org/pdf/1606.03472.pdf>
5. S. V. Gubbi and C. S. Seelamantula, "Risk estimation without using Stein's lemma -- Application to image denoising," <https://arxiv.org/pdf/1412.2210.pdf>
6. J. K. Mogali, A. K. Pediredla, and C. S. Seelamantula, "Template-based active contours," <https://arxiv.org/pdf/1312.0760.pdf>

Journal publications

1. S. Mulleti, A. Singh, V. Brahmkhatri, K. Chandra, T. Raza, S. P. Mukherjee, C. S. Seelamantula, and H. S. Atreya, "Super-resolved nuclear magnetic resonance spectroscopy," accepted to Nature Scientific Reports.
2. S. Mulleti and C. S. Seelamantula, "Paley-Wiener characterization of kernels for finite-rate-of-innovation sampling," Accepted to IEEE Transactions on Signal Processing.
3. S. Rudresh and C. S. Seelamantula, "Finite-rate-of-innovation-based super-resolution radar imaging," Accepted to IEEE Transactions on Signal Processing.
4. A. Chaturvedi, S. K. Nagaraj, S. S. Gorthi, and C. S. Seelamantula, "An efficient microscale technique for determining the erythrocyte sedimentation rate," Accepted to the Journal of the Society for Laboratory Automation and Screening (SLAS) Technology.
5. A. S. Murthy, C. S. Seelamantula, and T. V. Sreenivas, "Optimum short-time polynomial regression for signal analysis," accepted to Sadhana journal of the Indian Academy of Sciences.
6. S. Mulleti, B. A. Shenoy, and C. S. Seelamantula, "FRI sampling on structured nonuniform grids -- Application to super-resolved optical imaging," To appear in IEEE Transactions on Signal Processing.
7. K. Upadhya, C. S. Seelamantula, and K. V. S. Hari, "A risk minimization framework for channel estimation in OFDM systems," To appear in Signal Processing (Elsevier).
8. B. A. Shenoy, S. Mulleti, and C. S. Seelamantula, "Exact phase retrieval in principal shift-invariant spaces," IEEE Transactions on Signal Processing, vol. 64, no. 2, pp. 406-416, 2016. *This article featured on the cover-page of the IEEE Transactions on Signal Processing January/February 2016 issue.*
9. S. Mulleti and C. S. Seelamantula, "Ellipse fitting using the finite-rate-of-innovation sampling principle," IEEE Transactions on Image Processing, vol. 25, no. 3, pp. 1451-1464, 2016.

10. S. Mukherjee, R. Basu, and C. S. Seelamantula, "L1-K-SVD: A robust dictionary learning algorithm with simultaneous update," *Signal Processing (Elsevier)*, vol. 123, pp. 42-52, 2016.
11. R. Shenoy and C. S. Seelamantula, "A zero-crossing rate property of power complementary analysis filterbank outputs," *IEEE Signal Processing Letters*, vol. 22, no. 12, pp. 2354-2358, 2015.
12. H. Kishan and C. S. Seelamantula, "Patch-based and multiresolution optimum bilateral filters for denoising images corrupted by Gaussian noise," *SPIE Journal of Electronic Imaging*, vol. 24 (5), pp. 053021-1 -- 053021-15, Sept./Oct. 2015.
13. M. Venkatesh, K. Mohan, and C. S. Seelamantula, "Directional bilateral filters for smoothing fluorescence microscopy images," Invited article, *American Institute of Physics (AIP) Advances Special Issue on Emerging Topics in Fluorescence Microscopy and Imaging*, vol. 5, 084805-1 - 084805-17, 2015
14. H. Aragonda and C. S. Seelamantula, "Demodulation of narrowband speech spectrograms using the Riesz transform," *IEEE Transactions on Audio, Speech, and Language Processing*, vol. 23, no. 11, pp. 1824
15. B. A. Shenoy and C. S. Seelamantula, "Exact phase retrieval for a class of 2-D parametric signals," *IEEE Transactions on Signal Processing*, vol. 63, no. 1, pp. 90-103, 2015.
16. R. R. Shenoy and C. S. Seelamantula, "Spectral zero-crossings -- Localization properties and applications," *IEEE Transactions on Signal Processing*, vol. 63, no. 12, pp. 3177-3190, 2015.
17. C. S. Seelamantula and S. Mulleti, "Super-resolution reconstruction in frequency-domain opticalcoherence tomography," *IEEE Transactions on Signal Processing*, vol. 62, no. 19, pp. 5020-5029, 2014.
18. S. Mukherjee and C. S. Seelamantula, "Fienup algorithm with sparsity constraints: Application to frequency-domain optical-coherence tomography," *IEEE Transactions on Signal Processing*, vol. 62, no. 18, pp. 4659-4672, 2014.
19. C. S. Seelamantula and R. R. Shenoy, "A contraction mapping approach for robust estimation of lagged autocorrelation," vol. 21, no. 9, 2014, pp. 1054-1058, *IEEE Signal Processing Letters*.
20. A. Venkitaraman and C. S. Seelamantula, "Binaural signal processing motivated generalized analytic signal construction and AM-FM demodulation," *IEEE Transactions on Audio, Speech, and Language Processing*, vol. 22, no. 6, pp. 1023-1036, 2014.
21. S. R. Krishnan, C. S. Seelamantula, and P. Chakravarti, "Spatially adaptive kernel regression using risk minimization," vol. 21, no. 4, pp. 445-448, *IEEE Signal Processing Letters*.
22. S. Agnihotri, P. V. D. S. Sundeep, C. S. Seelamantula, and R. Balakrishnan, "Quantifying vocal mimicry in the Greater Racket-tailed Drongo: A comparison of automated methods and human assessment," *Public Library of Sciences One (PLoS 1) Biology*, vol. 9, no. 3, e89540, March 2014.
23. A. Venkitaraman, A. Adiga, and C. S. Seelamantula, "Auditory motivated Gammatone wavelet transform," *Signal Processing journal (Elsevier)*, vol. 94, pp. 608-619, January 2014.
24. A. Venkitaraman and C. S. Seelamantula, "Fractional Hilbert transform extensions and associated analytic signal construction," *Signal Processing journal (Elsevier)*, vol. 94, pp. 359-372, January 2014.
25. T. Lasser and C. S. Seelamantula, "Extended-focus optical-coherence microscopy -- Structural and functional imaging, from tissue to cell," Invited article, November 15, 2013, *Biophotonics magazine*.
26. A. Venkitaraman and C. S. Seelamantula, "On computing the amplitude, phase, and frequency modulations using a vector interpretation of the analytic signal," *IEEE Signal Processing Letters*, vol. 20, no. 12, pp. 1187-1190, December 2013. This article also featured in the top 25

popular articles of IEEE Signal Processing Letters (<http://ieeexplore.ieee.org/xpl/topAccessedArticles.jsp?punumber=97>).

27. A. Venkitaraman and C. S. Seelamantula, "Temporal envelope fit of transient audio signals," IEEE Signal Processing Letters, vol. 20, no. 12, pp. 1191-1194, December 2013.
28. C. S. Seelamantula and T. Lasser, "Hilbert transform relations in frequency-domain optical-coherence tomographic imaging," *Invited article*, vol. 93, no. 1, pp. 139-148, January-March 2013, Journal of the Indian Institute of Science, *Special issue* on Imaging and Microscopy.
29. R. R. Shenoy and C. S. Seelamantula, "Spectral-envelope--group-delay models for transients," Journal of Acoustical Society of America, vol. 33, issue 5, pp. 2788-2802, 2013.
30. S. R. Krishnan, M. M. Doss, and C. S. Seelamantula, "A Savitzky-Golay filtering perspective of dynamic feature computation," IEEE Signal Processing Letters, vol. 20, no. 3, pp. 281-284, 2013.
31. S. R. Krishnan and C. S. Seelamantula, "On the selection of optimum Savitzky-Golay filters," vol. 61, issue 2, pp. 380-391, IEEE Transactions on Signal Processing, 2013.
32. S. R. Krishnan and C. S. Seelamantula, "SURE-optimal bandwidth selection in nonparametric regression," vol. 11, no. 2-3, pp. 133-163, *Special issue* on Sampling Theory and Applications, Sampling Theory in Signal and Image Processing journal, 2012.
33. S. Mukherjee and C. S. Seelamantula, "A non-iterative phase retrieval algorithm for minimum-phase signals using the annihilating filter," vol. 11, no. 2-3, pp. 165-193, *Special issue* on Sampling Theory and Applications, Sampling Theory in Signal and Image Processing journal, 2012.
34. R. Nayak and C. S. Seelamantula, "Optimal sparsifying bases for frequency-domain optical-coherence tomography," Optics Letters, vol. 37, issue 23, pp. 4907-4909, 2012.
35. C. S. Seelamantula, N. Pavillon, C. Depeursinge, and M. Unser, "Local demodulation of holograms using the Riesz transform with application to microscopy," Journal of Optical Society of America (A), vol. 29, issue 10, pp. 2118-2129, 2012.
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38. H. Sundar, C. S. Seelamantula, and T. V. Sreenivas, "A mixture model approach for formant tracking and the robustness of Student's-t distribution," IEEE Transactions on Audio, Speech, and Language Processing, vol. 20, no. 10, pp. 2626-2636, 2012.
39. R. Delgado-Gonzalo, P. Thévenaz, C. S. Seelamantula, and M. Unser, "Snakes with an ellipse-reproducing property," IEEE Transactions on Image Processing, vol. 21, no. 3, pp. 1258-1271, March 2012.
40. C. S. Seelamantula, N. Pavillon, C. Depeursinge, and M. Unser, "Exact complex wave reconstruction in digital holography," Journal of the Optical Society of America A, vol. 28, no. 6, pp. 983-992, June 2011. This article also featured in the *Editor-in-Chief's choice* and was selected for additional publication in the virtual journal for biomedical optics (VJBO): http://vjbo.osa.org/virtual_issue.cfm. This article also featured 7th in the most downloaded articles in Holography of the Optical Society of America publishing (<http://emessaging.vertexcommunication.com/p/v6WOmbRT2N>).

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42. N. Ducros, A. Da Silva, J-M. Dinten, C. S. Seelamantula, M. Unser, and F. Peyrin, "A time-domain wavelet-based approach for fluorescence diffuse optical tomography," *Medical Physics*, vol. 37, no. 6, pp. 2890-2900, June 2010.
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45. S. Nair, R. Balakrishnan, C. S. Seelamantula, and R. Sukumar, "Vocalizations of wild Asian elephants (*Elephas maximus*): Structural classification and social context," *Journal of Acoustic Society of America*, vol. 126, no. 5, pp. 2768-2778, Nov. 2009.
46. C. S. Seelamantula and T. V. Sreenivas, "Blocking artifacts in speech/audio--Dynamic auditory perception and time-frequency filtering," *Signal processing*, vol. 89, no. 4, pp. 523-531, April 2009.
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Conference publications

1. J. K. Dhiman, N. Adiga, and C. S. Seelamantula, "A spectro-temporal demodulation technique for pitch estimation," Proceedings of Interspeech 2017, August 20-24, 2017, Stockholm, Sweden.
2. K. Vijayan, J. K. Dhiman, and C. S. Seelamantula, "Time-frequency coherence for periodic-aperiodic decomposition of speech signals," Proceedings of Interspeech 2017, August 20-24, 2017, Stockholm, Sweden.
3. J. R. Harish Kumar, R. Adhikari, Y. Kamath, R. Jampala, and C. S. Seelamantula, "Automatic delineation of macular regions based on a locally defined contrast function," Proceedings of IEEE International Conference on Image Processing (ICIP) 2017, Beijing, China, September 17-20, 2017.
4. S. Mukherjee and C. S. Seelamantula, "Learning transforms with a specified condition number," Proceedings of Signal Processing with Adaptive Sparse Structured Representations (SPARS), 2017, June 5-8, 2017, Lisbon, Portugal. Link to paper: http://spars2017.lx.it.pt/index_files/papers/SPARS2017_Paper_98.pdf
5. S. T. Devarakota, A. K. Sekuboyina, and C. S. Seelamantula, "A convolutional neural network approach for abnormality detection in wireless capsule endoscopy," Proceedings of IEEE International Symposium on Biomedical Imaging (ISBI) 2017, Melbourne, Australia, April 18-21, 2017.
6. A. Gupta, S. V. Gubbi, C. S. Seelamantula, "How much can a Gaussian smoother denoise?" ACM Proceedings of the Tenth Indian Conference on Computer Vision, Graphics, and Image Processing 2016, Guwahati, December 18-22, 2016.
7. A. Gupta, K. Subramanian, C. S. Seelamantula, "A distribution-independent risk estimator for image denoising," ACM Proceedings of the Tenth Indian Conference on Computer Vision, Graphics, and Image Processing 2016, Guwahati, December 18-22, 2016.
8. . S. Chandran, C. S. Seelamantula, S. Ray, "Duration Analysis of the Gamma Rhythm -- Too Short to be a Reference!," Bernstein Conference, Berlin, September 21-23, 2016.
9. C. S. Seelamantula, "Phase-encoded speech spectrograms," to appear in Proceedings of Interspeech 2016.
10. J. Sadasivan and C. S. Seelamantula, "A Novel Risk-Estimation-Theoretic Framework for Speech Enhancement in Nonstationary and Non-Gaussian Noise Conditions," to appear in Proceedings of Interspeech 2016.
11. H. Sundar, G. D. Manavalan, T. V. Sreenivas and C. S. Seelamantula, "Reverberation-Robust One-Bit TDOA Based Moving Source Localization for Automatic Camera Steering," to appear in Proceedings of Interspeech 2016.
12. B. C. Aravind, S. K. Nagaraj, C. S. Seelamantula, S. S. Gorthi, "Active-disc-based Kalman filter technique for tracking of blood cells in microfluidic channels," to appear in Proceedings of IEEE International Conference on Image Processing (ICIP) 2016.
13. J. R. Harish Kumar, C. S. Seelamantula, N. S. Narayan, and P. Marziliano, "Automatic segmentation of common carotid artery in transverse mode," to appear in Proceedings of IEEE International Conference on Image Processing (ICIP) 2016.
14. S. Mukherjee and C. S. Seelamantula, "Convergence analysis of smoothed LASSO," Proceedings of National Conference on Communications (NCC) 2016, to be held in IIT Guwahati, March 4-6, 2016.
15. A. K. Sekuboyina and C. S. Seelamantula, "An efficient formulation and parameter selection for multiple image super-resolution," Proceedings of National Conference on Communications (NCC) 2016, to be held in IIT Guwahati, March 4-6, 2016.
16. S. Mulleti and C. S. Seelamantula, "Sampling and reconstruction of time-limited signals using sum-of-sincs kernel," Proceedings of National Conference on Communications (NCC) 2016, to be held in IIT Guwahati, March 4-6, 2016.

17. P. Narayanamurthy, G. Sreedevi, and C. S. Seelamantula, "Efficient resampling of speech/audio signals," Proceedings of National Conference on Communications (NCC) 2016, to be held in IIT Guwahati, March 4-6, 2016.
18. J. Sadasivan, S. Mukherjee, and C. S. Seelamantula, "Joint dictionary training for bandwidth extension of speech signals," Proceedings of IEEE International Conference on Acoustics, Speech, and Signal Processing, 2016.
19. J. Sadasivan and C. S. Seelamantula, "An unbiased risk estimator for Gaussian mixture noise distributions -- Application to speech denoising," Proceedings of IEEE International Conference on Acoustics, Speech, and Signal Processing, 2016.
20. S. Mukherjee and C. S. Seelamantula, "A divide-and-conquer dictionary learning algorithm and its performance analysis," Proceedings of IEEE International Conference on Acoustics, Speech, and Signal Processing, 2016.
21. J. R. Harish Kumar, A. K. Pediredla, and C. S. Seelamantula, "Active discs for automated optic disc segmentation," Proceedings of IEEE GlobalSIP 2015.
22. P. Kurpad and C. S. Seelamantula, "Dictionary-learning-based postfilter for HMM-based speech synthesis," Proceedings of IEEE Region 10 Conference (TENCON), 2015.
23. C. S. Seelamantula and T. Blu, "Image denoising in multiplicative noise," Accepted to IEEE International Conference on Image Processing (ICIP) 2015.
24. S. Mukherjee and C. S. Seelamantula, "Smoothing does not improve the convergence rate of LASSO," Accepted to SPARS 2015.
25. A. Adiga, S. Mulleti, S. Prasad, and C. S. Seelamantula, "Two-dimensional FRI signal reconstruction using blind deconvolution," 11th International Conference on Sampling Theory and Applications (SampTA) 2015, May 25-29, 2015.
26. S. Nagesh and C. S. Seelamantula, "An FRI model for asymmetric pulse trains and characterization of ventricular hypertrophy condition," (Invited paper) Special session on Sampling signals with finite rate of innovation in biomedical applications, 11th International Conference on Sampling Theory and Applications (SampTA) 2015, May 25-29, 2015.
27. S. Nagesh and C. S. Seelamantula, "FRI sampling and reconstruction of asymmetric pulses," Proceedings of the 40th IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) to be held in Brisbane during April 19-24, 2015.
28. M. Venkatesh and C. S. Seelamantula, "Directional bilateral filters," Proceedings of the 40th IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) to be held in Brisbane during April 19-24, 2015.
29. S. Mulleti and C. S. Seelamantula, "Periodic nonuniform sampling for FRI signals," Proceedings of the 40th IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) to be held in Brisbane during April 19-24, 2015.
30. C. S. Seelamantula, B. A. Shenoy, S. Coquoz, and T. Lasser, "Exact reconstruction in quantitative phase microscopy," Proceedings of the 21st IEEE International Conference on Image Processing (ICIP) to be held in Paris during October 27-30, 2014.
31. S. Srinivas, A. Adiga, and C. S. Seelamantula, "Controlled blurring for improving image reconstruction quality in flutter-shutter acquisition," Proceedings of the 21st IEEE International Conference on Image Processing (ICIP) to be held in Paris during October 27-30, 2014.
32. S. Mulleti, S. Nagesh, R. Langoju, A. Patil, and C. S. Seelamantula, "Ultrasound image reconstruction using the finite-rate-of-innovation principle," Proceedings of the 21st IEEE

International Conference on Image Processing (ICIP) to be held in Paris during October 27-30, 2014.

33. S. Menon and C. S. Seelamantula, "Robust Savitzky-Golay filters," Proceedings of the 19th International Workshop on Digital Signal Processing, to be held in Hong Kong, during August 20-23, 2014.
34. B. Panisetti, T. Blu, and C. S. Seelamantula, "An unbiased risk estimator for multiplicative noise -- Application to 1-D signal denoising," Proceedings of the 19th International Workshop on Digital Signal Processing, to be held in Hong Kong, during August 20-23, 2014.
35. S. Mukherjee and C. S. Seelamantula, "A split-and-merge dictionary learning algorithm for sparse representation - Application to image denoising," Proceedings of the 19th International Workshop on Digital Signal Processing, to be held in Hong Kong, during August 20-23, 2014.
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38. S. Mulleti and C. S. Seelamantula, "Ellipse fitting using finite-rate-of-innovation principles," Proceedings of IEEE International Conference on Acoustics, Speech, and Signal Processing, to be held in Florence, Italy, May 4-9, 2014.
39. J. Sadasivan, S. Mukherjee, and C. S. Seelamantula, "An optimum shrinkage estimator based on minimum probability of error criterion and application to signal denoising," Proceedings of IEEE International Conference on Acoustics, Speech, and Signal Processing, to be held in Florence, Italy, May 4-9, 2014.
40. S. Nagesh, S. Mulleti, and C. S. Seelamantula, "On the role of the Hilbert transform in boosting the performance of the annihilating filter," Proceedings of IEEE International Conference on Acoustics, Speech, and Signal Processing, to be held in Florence, Italy, May 4-9, 2014.
41. R. R. Shenoy and C. S. Seelamantula, "Frequency-domain linear prediction using temporal analysis," Proceedings of IEEE International Conference on Acoustics, Speech, and Signal Processing, to be held in Florence, Italy, May 4-9, 2014.
42. S. Gurugopinath, C. R. Murthy, and C. S. Seelamantula, "Zero-crossings based spectrum sensing under noise uncertainties," Proceedings of National Conference on Communications 2014, to be held IIT Kanpur, February 28 - March 2, 2014.
43. A. Adiga, M. Magimai-Doss, C. S. Seelamantula, "Gammatone wavelet cepstral coefficients for robust speech recognition," Proceedings of IEEE Region 10 Conference (TENCON), Xi'an, China, October 22-25, 2013.
44. B. Vishwanath and C. S. Seelamantula, "Cell tracking using particle filters and level sets," Proceedings of IEEE Region 10 Conference (TENCON), Xi'an, China, October 22-25, 2013.
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46. B. A. Shenoy, S. Mukherjee, and C. S. Seelamantula, "Phase retrieval for a class of 2-D signals characterized by first-order difference equations," Proceedings of IEEE International Conference on Image Processing (ICIP), Melbourne, September 15-18, 2013.

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48. J. K. Mogali, N. Nallapareddy, C. S. Seelamantula, and M. Unser, "A shape-template based two-stage corpus callosum segmentation technique for sagittal plane T1-weighted brain magnetic resonance images," Proceedings of IEEE International Conference on Image Processing (ICIP), Melbourne, September 15-18, 2013.
49. S. Mulleti, B. A. Shenoy, and C. S. Seelamantula, "Sparse signal recovery in shift-invariant spaces," Proceedings of Workshop on Signal Processing with Adaptive Sparse Structured Representations (SPARS), Lausanne, Switzerland, July 8-11, 2013.
50. S. Mukherjee and C. S. Seelamantula, "Fixed-point algorithms for sparse-signal phase retrieval," Proceedings of Workshop on Signal Processing with Adaptive Sparse Structured Representations (SPARS), Lausanne, Switzerland, July 8-11, 2013.
51. A. Jose and C. S. Seelamantula, "Bilateral edge detectors," Proceedings of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Vancouver, May 26-31, 2013.
52. H. Aragona and C. S. Seelamantula, "Riesz-transform-based demodulation of narrowband speech spectrograms," Proceedings of the IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Vancouver, May 26-31, 2013.
53. S. Ghose, S. Hampali, and C. S. Seelamantula, "Estimation of linearly frequency modulated chirp signal parameters using instantaneous autocorrelation," Proceedings of IET Radar Conference, Xi'an, China, April 14-16, 2013.
54. S. Mulleti, B. Ajay Shenoy, and C. S. Seelamantula, "A multichannel sampling method for 2-D finite-rate-of-innovation signals," Proceedings of IEEE International Conference on Electronics, Computing, and Communication Technologies (CONECCT), Bangalore, January 17-19, 2013.
55. S. R. Krishnan and C. S. Seelamantula, "A generalized Stein's estimation approach for speech enhancement based on perceptual criteria," Proceedings of Workshop on Statistical and Perceptual Audition (SAPA) -- Speech Communication with Adaptive Learning (SCALE), Portland, September 7-8, 2012.
56. R. S. Hegadi, A. K. Pediredla, and C. S. Seelamantula, "Bilateral smoothing of gradient vector flow field and application to image segmentation," Proceedings of IEEE International Conference on Image Processing (ICIP) 2012, Orlando, September 30 - October 3, 2012.
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