

# AMIT SETHI

Associate Professor • EEE Dept • Indian Institute of Technology Guwahati • Guwahati 781039  
Adjunct Instructor • Dept of Pathology • University of Illinois at Chicago • Chicago IL 60612  
amitsethi@gmail.com, amitsethi@iitg.ac.in, asethi@uic.edu

---

## Research Areas

Computational pathology, deep learning, interest points, super-resolution << Computer vision, image processing, machine learning, pattern recognition << signal processing and algorithms.

---

## Education

Ph D	Electrical and Computer Engineering	University of Illinois at Urbana-Champaign	2001-2006
M S	General Engineering	University of Illinois at Urbana-Champaign	1999-2001
B Tech	Electrical Engineering	Indian Institute of Technology Delhi	1995-1999

---

## Employment and Positions

<u>Organization</u>	<u>Place</u>	<u>Position(s)</u>	<u>Duration</u>
Indian Institute of Tech. Guwahati	Guwahati, India	Assoc./Asst. Professor	Feb'11 – present
University of Illinois at Chicago	Chicago, IL, US	Visiting Scholar	Apr'14 – present
ZS Associates	Chicago, IL, US	Consultant/Assoc. Consultant	May'06 – Jan'11
NEC Labs America	Cupertino, CA, US	Visiting Scholar	May'03 – Nov'03

---

## Awards and Honors

- One of the five finalists in NVIDIA Global Impact Award, 2017.
- Invited talk on use of deep learning and machine learning in medicine, NVIDIA, GTCx, Mumbai, Dec 2016
- Indo-US Science and Technology Forum Fellowship to work on prostate cancer prediction at UIC, 2014-15
- Microsoft Young Faculty Award (India), 2011

---

## Mentoring Highlights

- PhD students: PhD completed (2), Microsoft India Fellowship, Erasmus Mundus Heritage Fellowships (2), Internship in Beckman Institute at UIUC
- Undergraduates: [Top score in U. of Warwick HER2 scoring contest](#), [GYTI Award](#), [TI university program best video demo award](#), [Intel India Embedded Challenge Gold Medal](#)

---

## Peer Reviewed Publications

### Journals

- "Convolutional neural networks for wavelet domain super resolution," by Neeraj Kumar, Ruchika Verma, Amit Sethi, in Pattern Recognition Letters, Volume 90, 15 April 2017, Pages 65–71
- "A Dataset and a Technique for Generalized Nuclear Segmentation for Computational Pathology", N Kumar, R Verma, S Sharma, S Bhargava, A Sethi, accepted in IEEE Transactions on Med. Imag. 2017
- "Structure-Preserving Color Normalization and Sparse Stain Separation for Histological Images." A. Vahadane, T. Peng, A. Sethi, et al., IEEE Transactions on Medical Imaging, 2016

- "Empirical Comparison of Color Normalization Methods for Epithelial-Stromal Classification in H&E Images." A. Sethi, L. Sha, A. Vahadane, et. al., Journal of Pathology Informatics, 2016.
- Fast Learning-Based Single Image Super-Resolution." N. Kumar, A. Sethi, IEEE Trans. Multimedia 2016.
- "Robust Structure and Motion from Outlines of Smooth Curved Surfaces", Y Furukawa, A Sethi, J Ponce, DJ Kriegman, in IEEE Trans. on Pattern Analysis and Machine Intelligence (PAMI), 2006, 28(2):302-15.
- "Curve and Surface Duals and the Recognition of Curved 3D Objects from their Silhouettes", A Sethi, D Renaudie, J Ponce, DJ Kriegman. International Journal of Computer Vision (IJCV), 2004, 58(1):73-86.
- "The role of higher-order image statistics in masking scene gist recognition." LC Loschky, BC Hansen, A Sethi, & TN Pydimarri, in Attention, Perception & Psychophysics, 2010, 72(2):427-44.
- "Event Detection using "Variable/Module Graphs" for Home Care Applications", A Sethi, M Rahrkar, TS Huang, in EURASIP Journal on Advances in Signal Processing 2007:074243.
- "The Importance of Information Localization in Scene Gist Recognition", LC Loschky, A Sethi, DJ Simons, TN Pydimarri, D Ochs, and JL Corbeille, in Journal of Experimental Psychology: Human Perception and Performance, 2007, 33(6):1431-1450.
- "Application of LSA for Clustering Protein Sequences", by Niyas K Haneefa , Amit Sethi, in International Journal of Engineering Trends and Technology 2013, vol 4(5)

### **Peer-Reviewed Conferences and Workshop Proceedings**

- "Convolutional neural networks for prostate cancer recurrence prediction", N Kumar, R Verma, A Arora, A Kumar, S Gupta, A Sethi, P Gann, SPIE Medical Imaging, Feb 2017.
- "Detecting Multiple Sub-Types of Breast Cancer in a Single Patient", by R Verma, N Kumar, A Sethi, PH Gann, in IEEE International Conference on Image Processing (ICIP) 2016 (accepted for presentation).
- "Computational Pathology for Predicting Prostate Cancer Recurrence", by A Sethi, L Sha, RJ Deaton, V Macias, AH Beck, PH Gann, in American Association for Cancer Research, Annual Meeting, Apr 2015.
- "Learning based Super-Resolution of Histological Images." A. Vahadane, N. Kumar, A. Sethi, in IEEE International Symposium on Biomedical Imaging (ISBI) 2016.
- "Action Recognition using Interest Points Capturing Differential Motion Information." G. Yadav, P. Shukla, A. Sethi, in IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2016.
- "On Spatial Neighborhood of Patch-Based Super Resolution", by N Kumar, A Sethi, in IEEE International Conference on Image Processing (ICIP), 2015.
- "Structure-Preserved Color Normalization for Histological Images", by A Vahadane\*, T Peng, S Albarqouni, M Baust, K Steiger, AM Schlitter, A Sethi, I Esposito, N Navab, in IEEE International Symposium on Biomedical Imaging (ISBI) 2015, Apr 16-19.
- "A Flow-based Interest Point Detector for Action Recognition in Videos", by G Yadav, A Sethi, in 9th Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP) 2014, Dec 14-17.
- "Interest point detection in videos using long point trajectories", by R Nallamotheu, V Thomas, G Yadav, A Sethi, in 9th Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP) 2014, Dec 14-17.
- "Drowsy Driver Detection using Representation Learning", by Kartik Dwivedi, Kumar Biswarnjan and Amit Sethi, in 4th IEEE International Advance Computing Conference (2014), Feb 21-22.

- "Towards generalized nuclear segmentation in histological images", by Vahadane, Abhishek ; Sethi, Amit, in IEEE 13th International Conference on Bioinformatics and Bioengineering (BIBE), 2013
- "Unusual event detection using sparse spatio-temporal features and bag of words model", by Mandadi, Balakrishna ; Sethi, Amit, in IEEE 2<sup>nd</sup> Intl. Conference on Image Information Processing (ICIIP), 2013
- "Unsupervised learning approach for abnormal event detection in surveillance video by revealing infrequent patterns", by Sandhan, Tushar ; Sethi, Amit ; Srivastava, Tushar ; Choi, Jin Young, in 28th International Conference of Image and Vision Computing New Zealand (IVCNZ), 2013
- "A frame-based decision pooling method for video classification", by Mohanty, Ambika Ashirvad ; Vaibhav, Bipul ; Sethi, Amit, in Annual IEEE India Conference (INDICON), 2013
- "reCAPTCHA assisted OCR for Devanagiri Texts", by Kailash Atal, Ashish Arora, Devendra Singh Sachan, P. K. Bora, Amit Sethi, in Indian Workshop on Machine Learning, 2013
- "Learning to Predict Super Resolution Wavelet Coefficients," by Neeraj Kumar, Naveen Kumar Rai, Amit Sethi, in International Conference on Pattern Recognition (ICPR) 2012
- "On Image-Driven Choice of Wavelet Basis for Super Resolution," by Neeraj Kumar, Amit Sethi, in International Conference on Signal Processing and Communications (SPCOM) 2012
- "A Spatial Neighbourhood Based Learning Setup for Super Resolution," by Amit Sethi, Neeraj Kumar, Naveen Kumar Rai, in Annual IEEE India Conference (INDICON) 2012
- "Neural Network based Single Image Super Resolution," by Neeraj Kumar, Pankaj Deswal, Jatin Mehta, Amit Sethi, in Symposium on Neural Network Applications to Electrical Engineering (NEUREL) 2012
- "Neural Network Based Image Deblurring," by Neeraj Kumar, Rahul Nallamothe, Amit Sethi, in Symposium on Neural Network Applications to Electrical Engineering (NEUREL) 2012
- "An Ingenious Technique for Symbol Identification from High Noise CAPTCHA Images," by Dhruv Kapoor, Harshit Bangar, Abhishek Chaurasia, Amit Sethi, in Annual IEEE India Conference (INDICON) 2012
- "Variable Module Graphs: A Framework for Inference and Learning in Modular Vision Systems", A Sethi, M Rahurkar, TS Huang, in International Conference on Image Processing (ICIP), 2005.
- "Robust Speaker Tracking by Fusion of Complementary Features from Audio and Video Modalities", M Rahurkar, A Sethi, TS Huang, in Workshop on Image Analysis for Multimedia Interactive Services (WIAMIS), 2005.
- "A Detection-Based Multiple Object Tracking Method", M Han, A Sethi, Y Gong, in International Conference of Image Processing (ICIP), 2004.
- "Structure from Motion for Smooth Textureless Objects", Y Furukawa, A Sethi, J Ponce, DJ Kriegman, in European Conference of Computer Vision (ECCV), 2004.
- "On Pencils of Tangent Planes and the Recognition of Smooth 3D shapes from Silhouettes", S Lazebnik, A Sethi, C Schmid, DJ Kriegman, J Ponce, M Hebert, in European Conf. of Computer Vision (ECCV), 2002.

---

## Professional Activities

- Reviewer, IEEE T-IP, IEEE Access, IEEE T-NNLS, SPIE Medical Imaging, and several conferences
- Finance Chair, Indian Conference on Computer Vision, Graphics, and Image Processing , ICVGIP 2016
- Member, IEEE and IEEE SPS
- Convenor, Department Undergraduate Program Committee, EEE, IIT G, 2012-13.