

SAKET ANAND

Asst. Professor

B-103, Academic Block, IIIT-Delhi, Okhla Phase-III, New Delhi, India

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RESEARCH INTERESTS

Computer Vision

Single and Multi-view Geometry. Robust statistical methods.

Machine Learning

Kernel methods and metric learning. Semi-supervised learning.

Application Areas

Vision and Learning for Autonomous Vehicles. Intelligent Annotation of Videos.

RESEARCH EXPERIENCE

Assistant Professor, IIIT-Delhi

Sept. 2013-Present

- Perception for autonomous vehicles to detect lanes, obstacles, traffic lights and road signs.
- Robust statistical estimation problems in computer vision and signal processing.
- Metric and kernel learning for semantic interpretation of visual data.
- Semi-automatic annotation tool for videos from vehicular cameras.

Graduate Assistant, RIUL, Rutgers University

Jan. 2010-Jun. 2013

Adviser: [Prof. Peter Meer](#)

- Semi-supervised methods for kernel mean-shift clustering.
- Robust regression using generalized projection based M-estimator.

Research Intern, Siemens Corporate Research, Princeton

Jun. 2011–Jun 2013

Supervisor: Dr. Maneesh Singh

- Geometric modeling of indoor scenes from a single RGB–D image.
- Indoor scene modeling using RGB–D image sequences.

Research Engineer, Read-Ink Technologies, Bangalore, India

Oct. 2007–Dec. 2009

Supervisor: Prof. Thomas O. Binford

- Lexical correction for recognition of handwritten characters of the English alphabet.
- Discriminative feature selection for recognition of handwritten English characters.
- Design of empirical probability density functions for classification.
- Designed a GUI for population level statistical analysis of extracted features.

Graduate Assistant, DIMACS, Rutgers University

Sep. 2005–Jun. 2006

Adviser: Prof. Richard Mammone, Prof. Fred Roberts

- Experimental analysis of sequential decision making algorithms for Port of Entry inspection procedures.
- Comparison of face recognition techniques like kernel Fisher, kernel PCA and bijective mappings.

PROJECTS

IIIT-Delhi

Sept. 2013-Present

- Swarath - Autonomous Last Mile Connectivity for Indian Roads
Participating in Mahindra Rise Prize - Driverless Car Challenge (National level)
- Animal Biometrics - Recognising Species and Individuals in the Wild
Collaboration with Wildlife Institute of India (WII)

TEACHING

Goethe University, Frankfurt am Main, Germany

(Invited Lecturer - 01/12/2016 - 31/12/2016)

- Robust Methods for Geometric Computer Vision (to be taught in Dec. 2016)
Traditional methods, sampling based, graph based and globally optimal methods.

IIIT-Delhi

Sept. 2013-Present

- Deep Learning (Winter 2016)
- Machine Learning (Monsoon 2016, 2017)
- Computer Vision (Winter 2014, 2015, 2016, 2017)
- Linear Optimization (Monsoon 2014, 2015)
- Statistical Signal Processing (Winter 2015, 2016, 2017)

EDUCATION

Rutgers University, NJ, USA, Ph.D., ECE,

Jun. 2013

Adviser: Prof. Peter Meer

Robust Methods for Multiple Model Discovery in Structured and Unstructured Data.

Rutgers University, NJ, USA, M.S., ECE,

Oct. 2006

Adviser: Prof. Richard Mammone

Comparison of Current Face Recognition Techniques.

Pune University, Pune, India, B.E., Electronics Engineering,

Jul. 2003

REFEREED PUBLICATIONS**Book Chapters**

- **Anand S.**, Mittal S., Meer P., *Robust Estimation for Computer Vision using Grassmann Manifolds*, Riemannian Computing in Computer Vision, Co-editors: P.K. Turaga and A. Srivastava, Springer, Chapter 6, 2016.

Journal Papers

- **Anand S.**, Mittal S., Tuzel O., Meer P., *Semi-Supervised Kernel Mean Shift Clustering*, IEEE Trans. on Pattern Analysis and Machine Intelligence (PAMI), vol. 36, pp. 1201-1215, Jun. 2014 (impact factor 4.9)
- Mittal S., **Anand S.**, Meer P., *Generalized Projection Based M-Estimator*, IEEE Trans. on Pattern Analysis and Machine Intelligence (PAMI), vol. 34, pp. 2351-2364, Dec. 2012 (impact factor 4.9)

Conference Papers

- G. Cheema and S. Anand, *Automatic Detection and Recognition of Individuals in Patterned Species*, accepted, European Conference on Machine Learning /Principles and Practice of Knowledge Discovery in Databases (ECML/PKDD), 2017.
- A. Jain, A. Fell and S. Anand, *Parallel Architecture for High Frame Rate Stereo using Semi-Global Matching*, accepted, British Machine Vision Conference (BMVC) 2017.
- Tiwari L., **Anand S.** and Mittal S., *Robust Multi-Model Fitting using Density and Preference Analysis*, Asian Conference on Computer Vision (ACCV) 308-323, (acceptance rate 25%).
- Shukla A. and **Anand S.**, *Metric Learning Based Automatic Segmentation of Patterned Species*. IEEE International Conference on Image Processing (ICIP), 2016, 3982-3986 (acceptance rate 45%).
- Tiwari L. and **Anand S.**, *Fast Hypothesis Filtering For Multi-Structure Geometric Model Fitting*. IEEE International Conference on Image Processing (ICIP), 2016, 3728-3732 (acceptance rate 45%).
- Mittal S., **Anand S.** and Meer P., *Generalized Projection based M-Estimator: Theory and Applications*. IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2011, 2689-2696 (acceptance rate 22.5%).

- **Anand S.**, Madigan D., Mammone R., Pathak S. and Roberts F., *Experimental Analysis of Sequential Decision Making Algorithms for Port of Entry Inspection Procedures*, in S. Mehrotra, et al (eds.), Proceedings of Intelligence and Security Informatics, LNCS 3975, Springer-Verlag, New York, 2006 (acceptance rate 31%).

Technical Reports and Workshop Papers

- Shukla A. and **Anand S.**, *Distance Metric Learning by Optimization on the Stiefel Manifold*, In H. Drira, S. Kurtek, and P. Turaga, editors, Proc. of the 1st Int. Workshop on DIFF-CV 2015, pages 7.1-7.10. BMVA Press, September 2015 (**Best Student Paper**).
- **Anand S.**, Singh M., Singh V. and Kluckner S., *Heteroscedastic 3D Superpixel Segmentation Using Noise Characterization of 3D Sensors*, Invention Disclosure, Siemens Corporation, 2012.
- Singh M., Singh V., **Anand S.** and Kluckner S., *Fast Statistical Approach for Semantic 3D Modeling of Indoor Scenes from Point Cloud Data*, Invention Disclosure, Siemens Corporation, 2012.
- **Anand S.**, Madigan D., Mammone R., Pathak S. and Roberts F., *Experimental Analysis of Sequential Decision Making Algorithms for Port of Entry Inspection Procedures*, DIMACS TR:2006-05.
- Podilchuk C., Patel A., Harthattu A., **Anand S.** and Mammone R., A New Face Recognition Algorithm based on Bijective Mappings, IEEE Workshop on FRGC Experiments, CVPR 2005.

PROFESSIONAL ACTIVITIES

- Reviewer for IEEE Transactions on Image Processing, IEEE Transactions on Knowledge and Data Engineering, IEEE Signal Processing Letters, Elsevier Pattern Recognition, Elsevier Information Fusion and Elsevier Robotics and Autonomous Systems.
- Member, Program Committee, DIFF-CVML, Workshop in conjunction with CVPR 2016.
- Member, Technical Committee, ICPR 2016
- IEEE Member.

REFERENCES

Available upon request.