

# Gaurav Sharma

Assistant Professor  
Department of Computer Science and Engineering  
Indian Institute of Technology Kanpur (IIT Kanpur)  
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## EDUCATION

*PhD in Computer Vision and Machine Learning, 2012*

LEAR (now THOTH) – INRIA Grenoble and CNRS GREYC – University of Caen, France

*Advisors:* Dr. Cordelia Schmid (INRIA) and Prof. Frederic Jurie (CNRS/UniCaen/ENSICAEN)

*Jury:* Dr. Patrick Perez (Technicolor/INRIA), Dr. Florent Perronnin (XRCE), Prof. Jean Ponce (ENS)

*Integrated Master of Technology in Mathematics and Computing, 2008*

Indian Institute of Technology Delhi (IIT Delhi), India

*Advisors:* Prof. S. Chaudhury (EE, IIT Delhi), Prof. J. B. Srivastava (Maths, IIT Delhi)

## EMPLOYMENT

04/2016 – *Assistant Professor, CSE, IIT Kanpur, India*

01/2015 – 03/2016 *Post doctoral fellow, MPI for Informatics, Saarbrücken, Germany, Host: Prof. Dr. Bernt Schiele*

05/2013 – 11/2014 *Researcher, Exploratory Research Group, Technicolor R&I, Rennes, France, Host: Dr. Patrick Perez*

12/2012 – 05/2013 *Researcher, CNRS GREYC, University of Caen, France, Host: Prof. Frederic Jurie*

09/2008 – 09/2009 *Senior Engineer, Technology Planning Group, Samsung Delhi R&D, India*

## INTERNSHIP/VISITS

11/2014 – 01/2015 *Visiting Researcher, CNRS GREYC, University of Caen, France, Host: Prof. Frederic Jurie*

06/2008 – 07/2008 *Research Engineer in Multimedia Lab, IIT Delhi, India, Host: Prof. Santanu Chaudhury*

12/2006 – 04/2007 *Winter Intern, Webaroo Inc., Delhi, India*

05/2006 – 07/2006 *Project Trainee/Intern, CGI Ltd., Bangalore, India*

05/2004 – 07/2004 *Summer Intern, VirtualWire Technologies, TBIU, IIT Delhi, India*

## PUBLICATIONS

### Refereed Journals

- J4\*. S. Srivastava, G. Sharma, B. Lall, Large Scale 3D Object Discovery, *arXiv:1701.07046*, 2017, (*under submission*)
- J3\*. K. Sikka, G. Sharma, Discriminatively Trained Latent Ordinal Model for Video Classification, *arXiv:1608.02318*, 2016, (*under revision*)
- J2. G. Sharma, F. Jurie, C. Schmid, Expanded Parts Model for Semantic Description of Humans in Still Images, *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, 39(1):87–101, 2017
- J1. G. Sharma, F. Jurie, Local Higher-Order Statistics (LHS) Describing images with statistics of local non-binarized pixel patterns, *International Journal on Computer Vision and Image Understanding (CVIU)*, 142:13–22, 2016

### Refereed Conferences

- C19\*. A. Kar, N. Rai, K. Sikka, G. Sharma, AdaScan: Adaptive Scan Pooling in Deep Convolutional Neural Networks for Human Action Recognition in Videos, *Computer Vision and Pattern Recognition (CVPR)* (preprint *arXiv:1611.08240*), Hawaii, USA, July 2017 (accepted; to appear)
- C18\*. S. K. Ramakrishnan, A. Pal, G. Sharma, A. Mittal, An Empirical Evaluation of Visual Question Answering for Novel Objects, *Computer Vision and Pattern Recognition (CVPR)*, Hawaii, USA, July 2017 (accepted; to appear)
- C17. B. Bhattarai, G. Sharma, F. Jurie, Deep Fusion of Visual Signatures for Client-Server Facial Analysis, *Indian Conference on Vision Graphics and Image Processing (ICVGIP)*, Guwahati, India, 2017 (**Best Paper Award Runner Up**)
- C16. K. Sikka, G. Sharma, M. Bartlett, LOMo: Latent Ordinal Model for Facial Analysis in Videos, *Computer Vision and Pattern Recognition (CVPR)*, Las Vegas, NV, USA, June 2016 (**Spotlight presentation**)
- C15. Y. Xian, Z. Akata, G. Sharma, Q. Nguyen, M. Hein, B. Schiele, Latent Embeddings for Zero-shot Classification, *Computer Vision and Pattern Recognition (CVPR)*, Las Vegas, NV, USA, June 2016 (**Spotlight presentation**)

- C14. B. Bhattarai, G. Sharma, F. Jurie, CP-mtML: Coupled Projection multi-task Metric Learning for Large Scale Face Retrieval, *Computer Vision and Pattern Recognition (CVPR)*, Las Vegas, NV, USA, June 2016
- C13. B. Bhattarai, G. Sharma, A. Lechervy, F. Jurie, A Joint Learning Approach for Cross Domain Age Estimation, *International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Shanghai, China, 2016 (**Best Student Paper Award** of Image, Video and Multidimensional Signal Processing)
- C12. G. Sharma, B. Schiele, Scalable Nonlinear Embeddings for Semantic Category-based Image Retrieval, *International Conference on Computer Vision (ICCV)*, Santiago, Chile, Dec 2015
- C11. G. Sharma, F. Jurie, P. Perez, EPML: Expanded Parts based Metric Learning for Occlusion Robust Face Verification, *Asian Conference on Computer Vision (ACCV)*, Singapore, Nov 2014
- C10. P. Kulkarni, G. Sharma, J. Zepeda, L. Chevallier, Transfer Learning via Attributes for Improved On-the-fly Classification, *Winter Conference on Applications of Computer Vision (WACV)*, Colorado, USA, Mar 2014
- C9. G. Sharma, F. Jurie, C. Schmid, Expanded Parts Model for Human Attribute and Action Recognition in Still Images, *Computer Vision and Pattern Recognition (CVPR)*, Oregon, Portland, USA, June 2013
- C8. G. Sharma, F. Jurie, A Novel Approach for Efficient SVM Classification with Histogram Intersection Kernel, *British Machine Vision Conference (BMVC)*, Bristol, UK, Sep 2013 (**Oral presentation**; 7% acceptance rate)
- C7. G. Sharma, S. ul Hussain, F. Jurie, Local Higher-Order Statistics (LHS) for Texture Categorization and Facial Analysis, *European Conference on Computer Vision (ECCV)*, Florence, Italy, October 2012
- C6. G. Sharma, F. Jurie, C. Schmid, Discriminative spatial saliency for image classification, *Computer Vision and Pattern Recognition (CVPR)*, Providence, RI, USA, June 2012
- C5. G. Sharma, F. Jurie Learning discriminative spatial representation for image classification *British Machine Vision Conference (BMVC)*, Dundee, UK, Sep 2011 (**Oral presentation**; 8% acceptance rate)
- C4. A. Dhall, G. Sharma, R. Bhatt, G. M. Khan, Adaptive digital makeup, *International Symposium on Visual Computing (ISVC)*, Las Vegas, NV, USA, November 2009
- C3. G. Sharma, A. Dhall, S. Chaudhury, R. Bhatt, Hierarchical System for Categorization and Orientation Detection of Consumer Images, *International Conference on Pattern Recognition and Machine Intelligence (PReMI)*, Delhi, India, December 2009
- C2. G. Sharma, S. Chaudhury, J. B. Srivastava, Bag-of-Features Kernel Eigen Spaces for Classification, *International Conference on Pattern Recognition (ICPR)*, Tampa, FL, USA, December 2008
- C1. G. Sharma, S. Chaudhury, J. B. Srivastava, Object Detection as Statistical Test of Hypothesis, *Indian Conference on Vision Graphics and Image Processing (ICVGIP)*, Orissa, India, December 2008

#### Refereed International Workshops

- W5. G. Sharma, P. Perez, Latent Max-margin Metric Learning for Comparing Video Face Tubes, *Computer Vision and Pattern Recognition (CVPR), Biometrics Workshop*, Boston, USA, Jun 2015 (**Best Paper award**)
- W4. B. Bhattarai, G. Sharma, F. Jurie, P. Perez, Some Faces are More Equal than Others: Hierarchical Organization for Accurate and Efficient Large-scale Identity-based Face Retrieval, *European Conference on Computer Vision (ECCV) Workshops*, Zurich, Switzerland, Sep 2014
- W3. A. Choudhary, G. Sharma, S. Chaudhury, S. Banerjee, Distributed Calibration of Pan-Tilt Camera Network using Multi-Layered Belief Propagation, *Workshop on Camera Networks, Computer Vision and Pattern Recognition (CVPR)*, San Francisco, CA, USA, June 2010
- W2. G. Sharma, R. Garg, S. Chaudhury, Curvature Feature Distribution based Classification of Indian Scripts from Document Images, *International Workshop on Multilingual OCR, International Conference on Document Analysis and Recognition (ICDAR)*, Barcelona, Spain, July 2009
- W1. L. Dey, M. Abulaish, Mr. Jahiruddin and G. Sharma, Text Mining through Entity-Relationship Based Information Extraction, *Workshop on Bio-Med. Appl. of Web Tech., IEEE/WIC/ACM Intl. conf. on Web Intelligence and Intl. Agent Tech.*, Silicon Valley, CA, USA, 2007

#### Technical Reports

- TR1. G. Sharma, F. Jurie, P. Perez, Learning Nonlinear SVM in Input Space for Image Classification, *HAL Technical report, hal-00977304*, 2014

#### TEACHING

- 01/2017 – 05/2017 Instructor, *CS698U: Topics in Computer Vision* (48 students), IIT Kanpur
- 01/2017 – 01/2017 Deep Learning Short Course (100 attendees), 3 × 1.5h Lectures, IIT Kanpur

- 07/2016 – 11/2016 Instructor, *CS698N: Advanced Topics in Computer Vision* (37 students), IIT Kanpur
- 07/2016 – 07/2016 Deep Learning Summer School (120 attendees), 2×1.5h Lectures, IIIT Hyderabad
- 03 – 04 & 09/2006 TA for OS Course and Lab (25 students), 2×60h, Embedded Systems Course, FITT, IIT Delhi

#### **SPONSORED AND CONSULTANCY PROJECTS**

- ◇ Co-PI – *Modeling and Imaging of Gas Hydrates Reservoirs using Integrated Techniques*, Oil and Natural Gas Corporation Limited (ONGC), India, INR 65 lacs / USD 95k, 2017
- ◇ PI – *Multimodal Methods and Systems for Vision and Language*, Early Career Research Award (ECRA), Science and Engineering Research Board (SERB), Govt. of India, INR 28 lacs / USD 40k, 2016
- ◇ PI – *Title withheld*, Agency withheld, INR 14 lacs / USD 20k, 2016
- ◇ PI – *Analyzing Data For Driver Safety Mobile Application*, Kruzzr Inc., INR 2.16 lacs / USD 3k, 2016

#### **HONORS AND AWARDS**

- ◇ Best Paper Award Runner Up at Indian Conference on Computer Vision, Graphics and Image Processing, 2016
- ◇ Early Career Research Award (ECRA) by Science and Engineering Research Board (SERB), Department of Science and Technology (DST), Government of India, 2016
- ◇ Best Student Paper Award of Image, Video and Multidimensional Signal Processing (primary author B. Bhattarai) at International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2016
- ◇ Outstanding Reviewer Award at International Conference on Computer Vision (ICCV), 2015
- ◇ Best Paper Award at Workshop on Biometrics at IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2015, Boston, MA, USA
- ◇ Max Planck Institute (MPI) Post Doctoral Fellowship, 2015
- ◇ Joint winner and runner up of PASCAL VOC 2010 and 2011 (resp.) Action Recognition from Still Images Challenges
- ◇ PhD grant/contract (3 years) under French National Research Agency (ANR) project SCARFACE; complete funding for focused research, 2009
- ◇ INRIA Summer School (2010) on Computer Vision and Machine Learning
- ◇ Certificate of excellence by Samsung Delhi R&D for contribution to Patent Generation Program, 2009
- ◇ All India Rank 936 in IIT Joint Entrance Exam 2003 out of 175,000 students
- ◇ Letter of appreciation from National Council for Education Research and Training (NCERT) for clearing written stages of National Talent Search Examination (NTSE)
- ◇ Center for Scientific and Industrial Research (CSIR) Program for Youth Leadership in Science (CPYLS)

#### **STUDENT (CO-)SUPERVISION AND COLLABORATION**

##### Bachelors students

Vinayak Tantia, Indian Institute of Technology Kanpur  
 Amlan Kar, Indian Institute of Technology Kanpur  
 Nishant Rai, Indian Institute of Technology Kanpur  
 Shubham Jain, Indian Institute of Technology Kanpur  
 Rahul Gupta, Indian Institute of Technology Kanpur  
 Ambar Pal, Indraprastha Institute of Information Technology Delhi

##### Masters students

Ankit Pensia, Indian Institute of Technology Kanpur  
 Rahul Sharma, Indian Institute of Technology Kanpur  
 Santhosh Kumar, Indian Institute of Technology Madras  
 Yongqin Xian, from University of Saarland at Max Planck Institute for Informatics  
 Praveen Kulkarni, from Technical University Darmstadt, Germany at Technicolor, France  
 Paul Martin, from and at CNRS GREYC, University of Caen, France, 2013

## PhD students

Kranti Kumar Parida, Indian Institute of Technology Kanpur

Prem Raj, Indian Institute of Technology Kanpur

Siddharth Srivastava, Indian Institute of Technology Delhi

Karan Sikka, University of California San Diego

Yongqin Xian, Max Planck Institute for Informatics

Binod Bhattarai, CNRS GREYC, University of Caen, France

## SERVICE TO THE COMMUNITY

### Proposal Reviewer

Science and Engineering Research Board (SERB), Government of India, 2016

Indo-French Centre for the Promotion of Advanced Research, 2016

### Journal Reviewer

International Journal of Computer Vision (IJCV), 2015, 2016

IEEE Transactions on Image Processing (TIP), 2015, 2017

Computer Vision and Image Understanding (CVIU), 2014, 2015, 2016

Image and Vision Computing (IVC), 2013, 2014, 2015

IEEE Transactions on Affective Computing (TAFFC), 2015

Pattern Recognition (PR), 2016

Pattern Recognition Letters (PRL), 2014

Neurocomputing (NC), 2016

Machine Vision and Applications (MVAP), 2017

### Conference Reviewer/Program Committee

Computer Vision and Pattern Recognition (CVPR), 2014, 2015, 2016, 2017

European Conference on Computer Vision (ECCV), 2014, 2016

Asian Conference on Computer Vision (ACCV), 2014, 2016

Neural Information Processing Systems (NIPS), 2016

International Conference on Artificial Intelligence and Statistics (AISTATS), 2017

Indian Conference on Vision Graphics and Image Processing (ICVGIP), 2016

International Conference on Computer Vision (ICCV), 2015

International Conference on Pattern Recognition (ICPR), 2014

### Workshop Program Committee

Emotion Recognition in the Wild Challenge and Workshop, 2014, 2015 (with ICMI)

Computer Vision for Affective Computing, 2014 (with ACCV), 2015 (with ICCV)

## TECHNICAL TALKS

Indraprastha Institute of Information Technology Delhi (Guest Lecture), 2017

Indian Institute of Technology Kanpur (Short Course), 2017

Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP), IIT Guwahati, 2016

Bosch Research India, Bangalore, 2016

Intel Research India, Bangalore, 2016

Samsung Research India, Delhi (SRI Delhi), 2016

International Institute of Information Technology, Hyderabad, (IIITH Summer School), 2016

Indian Institute of Science (IISc), 2016

Xerox Research Center India (XRCI), 2016  
Indraprastha Institute of Information Technology Delhi (IIIT Delhi), India, 2015  
GREYC CNRS, University of Caen, France, 2016  
IBM India Research Lab, Delhi, 2015  
Innovation Labs, Tata Consultancy Services (TCS iLabs), Delhi, India, 2015  
Indian Institute of Technology Kanpur (IIT Kanpur), 2015  
Indian Institute of Technology Delhi (IIT Delhi), 2015  
Indraprastha Institute of Information Technology Delhi (IIIT Delhi), India, 2015  
Max Planck Institute for Informatics (MPI-Inf), Germany, 2014  
Indian Institute of Technology Delhi (IIT Delhi), 2014  
Jawaharlal Nehru University (JNU), New Delhi, India, 2014  
British Machine Vision Conference (BMVC), University of Bristol, UK, 2013  
Xerox Research Center Europe (XRCE), Grenoble, France, 2013  
Technicolor Research and Innovation, Rennes, France, 2013  
National Research Institute for Computer Science and Automation (INRIA) Paris, France, 2012  
British Machine Vision Conference (BMVC), University of Dundee, UK, 2011

#### **REFERENCES**

Available on request

Mar 2017