

Anand Mishra, PhD

Assistant Professor

Department of Computer Science and Engineering
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Employment

- **Indian Institute of Technology** Jodhpur, India
Assistant Professor July 2019 - Present
- **Indian Institute of Science** Bangalore, India
Research Associate (postdoctoral fellow) August 2017 - July 2019
Host: Dr. Partha Pratim Talukdar
Research focus: Knowledge-aware Computer Vision
- **International Institute of Information Technology** Hyderabad, India
Research fellow (postdoctoral fellow) December 2016 - July 2017
Host: Prof. C. V. Jawahar
Research focus: Intelligent Image Matching

Education

- **International Institute of Information Technology** Hyderabad, India
PhD, Computer Science and Engineering (CGPA: 8.6) August 2009 - November 2016
 - **Thesis:** Understanding Text in Scene Images
 - **Advisers:** Prof. C. V. Jawahar (IIIT-H) and Dr. Karteek Alahari (Inria, France)
 - **PhD committee:** Prof. S. Chaudhury (IIT-D/CEERI Pilani), Dr. A. Sharma (IIIT-H), Dr. P. Chaudhuri (IIT-B) and advisers
 - **Top-tier publications:** ICCV'13, CVPR'12
 - **Total citations:** 693 (source: Google Scholar, March 2019)
 - **Major awards:** XRCI best doctoral dissertation award 2015: first runner-up, Microsoft Research India PhD fellowship Award 2012
- **Birla Institute of Technology Mesra** Ranchi, India
M.Tech., Computer Science (CGPA: 8.2) 2006-2008
 - **Thesis:** Image Compression using Weighted Finite Automata
 - **Adviser:** Prof. G. Sahoo
 - **Fellowship:** MHRD GATE Fellowship
- **Guru Ghasidas University (now a central univ.)** Bilaspur, India
M.Sc., Computer Science (Percentage: 68.8) 2004-2006
- **Guru Ghasidas University (now a central univ.)** Bilaspur, India
B.Sc., with Mathematics (Percentage: 72.3) 2001-2004
- **Govt. boys school (MPBSE)** Jashpur Nagar, India
12th. with Physics, Chemistry, Mathematics (Percentage: 76.7) 2001
- **Govt. model school (MPBSE)** Jashpur Nagar, India
10th. (Percentage: 79.0) 1999

Awards/Fellowships

Google Gift to support travel for AAAI 2019 (Honolulu)	December 2018
First runner-up for the doctoral dissertation award at XRCI Open 2015 (XRCI Open is organized by Xerox Research Centre India, and five Computer Science PhD students from the country were shortlisted as finalists for this year).	Jan 2015
ACM-India Travel Grant to attend ACM-IRISS 2015 (Goa)	Feb 2015
XRCI Travel Grant to attend Xerox Open 2015 (Bengaluru)	Jan 2015
IEEE Student Travel Grant to attend ICCV 2013 (Sydney)	Dec 2013
Microsoft Research India PhD fellowship 2012 Award (One among only four PhD students in the country in year 2012)	Aug 2012
Google India Travel Grant to attend CVPR 2012 (Providence)	April 2012
Microsoft Research India Travel Grant to attend ICDAR 2011 (Beijing)	July 2011
IIIT Institute Fellowship	2009 - 2012
GATE Scholarship	2006 - 2008

Research Grants

- Part Detection and Knowledge-aided Zero-shot Part Classification
 - PIs: A. Chakraborty, Partha Pratim Talukdar, Anand Mishra
 - with Siemens Corporation India
 - Duration: 9 months (January 2019 - September 2019)

Publications

Total citations: 732, *h*-index: 8, *i10*-index: 7. (Source: Google Scholar, July 2019)

Journals:

1. **Anand Mishra**, *DHFML: Deep Heterogeneous Feature Metric Learning for Matching Photo-Cartoon Pairs*, International Journal of Multimedia Retrieval, pages 1–8, 2018.
2. **Anand Mishra**, Karteek Alahari, C. V. Jawahar, *Unsupervised refinement of color and stroke features for text binarization*, International Journal on Document Analysis and Recognition, Volume 20(2), pages 105–121, 2017. (Citation count: 7)
3. **Anand Mishra**, Karteek Alahari, C. V. Jawahar, *Enhancing Energy Minimization Framework for Scene Text Recognition with Top-Down Cues*, Computer Vision and Image Understanding, volume 145, pages 30–42, 2016. (Citation count: 7)

Conferences/Workshops:

1. Anjali Shenoy, Aayush Bansal, **Anand Mishra**, Partha Talukdar, *Memex revisited: In the wild image analysis and inference*, (**working draft**).
2. Ajeet Kumar Singh, **Anand Mishra**, Shashank Shekhar, Anirban Chakraborty, *From String to Things: Knowledge-enabled VQA Model that can read and reason*, **ICCV 2019 [CORE ranking: A*]**.
3. **Anand Mishra**, Ajeet Kumar Singh, Shashank Shekhar*, Anirban Chakraborty, *OCR-VQA: Visual Question Answering by Reading Text in Images*, **ICDAR 2019. [CORE ranking: A]**

4. Sanket Shah*, **Anand Mishra***, Naganand Y., Partha Pratim Talukdar, *KVQA: Knowledge-aware Visual Question Answering*, **AAAI 2019** (*: equal contribution). [**CORE ranking: A***]
5. **Anand Mishra** and Ajeet K. Singh, *Deep Embedding using Bayesian Risk Minimization with Application to Sketch Recognition*, ACCV 2018.
6. Ashutosh Mishra, Shyam N. Rai, **Anand Mishra**, C. V. Jawahar, *IIIT-CFW: A benchmark database for Cartoon Faces in the Wild*, ECCVW 2016 (oral). (Citation count: 8)
7. Ajeet K. Singh, **Anand Mishra**, Pranav Dabral, C. V. Jawahar, *A Simple and Effective Solution for Script Identification in the Wild*, DAS 2016. (Citation count: 7)
8. Swetha Sirnam, **Anand Mishra**, G. M. Hegde, C. V. Jawahar, *Efficient Object Annotation for Surveillance and Automotive Applications*, WACV Workshop 2016.
9. Udit Roy, **Anand Mishra**, Karteek Alahari, C. V. Jawahar, *Scene Text Recognition and Retrieval for Large Lexicons*, ACCV 2014. (Citation count: 7)
10. **Anand Mishra**, Karteek Alahari, C. V. Jawahar, *Image Retrieval using Textual cues*, **ICCV 2013**. (Citation count: 36) [**CORE ranking: A***]
11. Vibhor Goel, **Anand Mishra**, Karteek Alahari, C. V. Jawahar, *Whole is Greater than Sum of Parts: Recognizing Scene Text Words*, ICDAR 2013. (Citation count: 80) [**CORE ranking: A**]
12. Vijay Kumar, Amit Bansal, Gautom Hari Tulsiyan, **Anand Mishra**, Anoop Namboodari, C. V. Jawahar, *Sparse Document Image Coding for Restoration*, ICDAR 2013. [**CORE ranking: A**] (Citation count: 13)
13. **Anand Mishra**, Naveen T.S., Viresh Ranjan, C. V. Jawahar, *Automatic Localization and Correction of Line Segmentation Errors*, DAR 2012 (Oral).
14. Deepan Gupta*, Vaidehi Chhajer*, **Anand Mishra**, C. V. Jawahar, *A Non-local MRF model for Heritage Architectural Image Completion*, ICVGIP 2012 (*: equal contribution).
15. **Anand Mishra**, Karteek Alahari, C. V. Jawahar, *Scene Text Recognition using Higher Order Language Priors*, BMVC 2012 (Oral). (Citation count: 182)
16. **Anand Mishra**, Karteek Alahari, C. V. Jawahar, *Top-down and Bottom-up cues for Scene Text Recognition*, **CVPR 2012**. (Citation count: 251) [**CORE ranking: A***]
17. **Anand Mishra**, Karteek Alahari, C. V. Jawahar, *An MRF Model for Binarization of Natural Scene Texts*, ICDAR 2011 (Oral). (Citation count: 97) [**CORE ranking: A**]
18. Dheeraj Mundhra, **Anand Mishra**, C. V. Jawahar, *Automatic Localization of Page Segmentation Errors*, J-MOCR-AND 2011 (Oral).

Teaching Experience

Post PhD:

- **Indian Institute of Science**
 - Guest lecture on *Graph Representation Learning*
 - One lecture under course *Deep Learning for Computer Vision*
 - Primary Instructor: Dr. Venkatesh Babu

Bangalore, India
Spring 2019

- **Indian Institute of Science** Bangalore, India
Co-Instructor (UE-101: Algorithms and Programming) Monsoon 2018
 – Undergraduate introductory course
 – Co-taught with Dr. S. Govindrajan and Dr. Viraj Kumar

During PhD:

- **International Institute of Information Technology** Hyderabad, India
Instructor (Computer Problem Solving for M.Tech. in Bio-informatics) Monsoon 2016
- **Indian Institute of Information Technology** Sri City, India
Visiting Instructor (Operating Systems, selected topics in Comp. Archi.) Aug 2014 - April 2015
- **International Institute of Information Technology** Hyderabad, India
Teaching Assistant (Statistical Methods in AI, Computer Vision) Monsoon 2013, Spring 2011/14

During masters:

- **Birla Institute of Technology Mesra** Ranchi, India
Teaching Assistant (Data structure, C programming) Monsoon 2007, Spring 2008

Selected Academic Projects

- Image Compression using WFA (M.Tech. computer science project)
- Movie search (computer vision course project)
- Large scale image classification (computer vision course project)
- Online character recognition (pattern recognition course project)
- Implementation of back-propagation for neural networks (pattern recognition course project)
- Text detection using image processing techniques (digital image processing project)
- Face recognition using local binary pattern (pattern recognition and image analysis course project at BIT Mesra)

Sponsored Projects (as a research assistant)

Intelligent image matching with Altair India & IIIT-H	2016 – 2017
Video tracking with Bosch Research & IIIT-H	2015 – 2016
Virtual labs with MHRD & IIIT-H	2011 – 2012
Letter receive and dispatch system with SECL Bilaspur	2005 – 2006

Selected Invited Talks/Poster Presentations

- From Strings to Things: Towards Knowledge-aware Computer Vision, IIIT-B, Bengaluru (April 2019)
- Scene Text Recognition: Pre and Post Deep Learning, BLIPAR, Bengaluru (May 2017)
- Understanding Text in Scene Images, Visual Learning and Intelligence lab, department of CSE, IIT-Hyderabad, India (September 2015)

- Understanding Text in Scene Images, ACM-IRISS 2015, Goa, India (February 2015)
- Understanding Text in Scene Images, XRCI Open 2015, Bengaluru, India (January 2015)
- Higher Order CRF Model for Scene Text Recognition, Amazon-ML group, Bengaluru, India (December 2014)
- Understanding Text in the Wild, R & D showcase 2013, IIIT Hyderabad
- Image Retrieval using Textual cues, ICCV 2013, Sydney (Australia)
- Probabilistic Model for Scene Text Recognition, Mysore Workshop on Machine Learning - 2012
- Top-down and Bottom-up cues for Scene Text Recognition, CVPR 2012, Providence (USA)
- Scene Text Recognition using Higher Order Language Priors, BMVC 2012, Univ. of Surrey (UK)
- An MRF model for Binarization of Natural Scene Texts, Presented to Prof. Michael Werman (during his visit to IIIT Hyderabad), 2012
- Indian Language OCRs, R & D showcase 2011, IIIT Hyderabad
- An MRF Model for Binarization of Natural Scene Texts, ICDAR 2011, Beijing (China)
- Document Image Analysis Activities at CVIT, Presented to Prof. Koichi Kise (during his visit to IIIT Hyderabad), 2010
- Expert systems in Agriculture, National Conference on IT in agriculture 2008, BAU Ranchi
- Steps towards Green Computing, National Symposium on Green Computing 2008, BIT Mesra, Ranchi

Mentoring.

I have co-mentoring following members/students at CVIT, MALL and/or VC lab :

- Anjali Shenoy: Never Ending Scene Understanding [with Dr. Talukdar and Aayush Bansal (CMU)]
- Aditay Tripathi: Web-scale Visual Entity Linking [with Dr. Talukdar and Dr. Chakraborty]
- Shashank: Text-KVQA [with Dr. Chakraborty and Ajeet K. Singh (TCS)]
- Ashutosh Mishra (B. Tech. student, IIIT Sri city): cartoon understanding [with Prof. Jawahar]
- Shyam N. Rai (B. Tech. student, IIIT Sri city): cartoon understanding [with Prof. Jawahar]
- Dheeraj Mundhra (Summer intern from IIT Kharagpur): Page segmentation errors [with Prof. Jawahar]
- Vaidehi Chhajjer (B.Tech. student, IIIT Hyderabad): Image inpainting [with Prof. Jawahar]
- Deepan Gupta (B.Tech. student, IIIT Hyderabad): Image inpainting [with Prof. Jawahar]
- Vibhor Goel (B.Tech. student, IIIT Hyderabad): Holistic word recognition [with Prof. Jawahar]
- Pranab Dabral (Intern from VIT Vellore): Indian language scene text dataset annotations and script identification. [with Prof. Jawahar]
- Raksha Raghunathan (Summer intern from PESIT Bengluru): Script identification in news videos. [with Prof. Jawahar]

Professional service

- Co-organizing a workshop: “Knowledge Bases and Multiple Modalities (KBMM)” at Automated Knowledge Base Construction (AKBC) 2019. Workshop will be organized in UMASS, Amherst, USA on May 22, 2019.
- Reviewer: ICCV 2019, IJCAI 2019, ICDAR 2019, ICCV 2017, IEEE TPAMI, CVIU, IEEE TCSVT, IJDAR, Neuro-computing, ACCV 2016, ICVGIP 2014/2016/2018
- Program committee member: DAR (a workshop under ICVGIP 2018)
- Hosted a departmental talk in IISc by Ravi Shekhar, PhD candidate from Univ. of Trento in April 2019.
- Hosted a departmental talk in IISc by Aayush Bansal, senior PhD student from CMU in Feb 2018.
- Co-ordinated 2018 Summer Intern Selection Process at MALL lab, IISc. We received 630 applications and selected 5 summer interns.
- Offered tutorial on Python programming at summer school on deep learning for computer vision held during 2017 at IIIT Hyderabad. This event has over 150 participants from Indian academia and industry.
- Co-ordinated reading group activities at summer school on deep learning for computer vision (SS-DLCV) held during July 11 - July 16, 2016 at IIIT Hyderabad. This event has over 150 participants from Indian academia and industry.
- Co-ordinated a tutorial session on usage of libSVM at WRTIPPR organized at IIIT-H in 2013. More than 30 research scholars/faculty members from various colleges of India participated in this workshop.

References

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