Dr. Santosh Kumar Vipparthi

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Highlights

- Image Retrieval
- Emotion / Expression Recognition
- Arial Image Analysis
- Deep Learning
- Face Recognition
- Motion Detection

Accomplishments

I lead Vision Intelligence Lab @ MNIT with research focused on important visual perception tasks such as object detection, human emotion recognition, aberrant event detection, image retrieval, Gesture recognitions, Motion analysis, etc. Received research grant from DST-SERB in 2018 and GPU grant from NVIDIA, USA. Further, completed two consultancy projects and one in the active stage. Some of my research findings are shared with the research community via reputed international journals (IEEE Trans, IEEE Journals, IEEE Letters, IET, Elsevier, Springer, etc.) and Top-rated conferences (ACMMM, WACV, CVPRW, IJCNN, ICPR, SMC, ICIP, ICVGIP, INDICON, etc.).

Summary

Presently Assistant Professor, Department of Computer Science Engineering, Malaviya National Institute of Technology (NIT), Jaipur, also, Adjunct Faculty in Indian Institute of Information Technology (IIIT Kota).
Ph.D. & M. Tech in Systems Engineering from Indian Institute of Technology BHU (IIT-BHU), Varanasi, 2014, 2010, respectively. I have 11+ years of hands-on teaching and industrial experience.

Experience

Assistant Professor (October 2013 - Present)
Department of Computer Science and Engineering, MNIT Jaipur, Rajasthan, India
Adjunct Faculty (April 2015 - Present): Department of Computer Science and Engineering, IIIT-Kota, Rajasthan, India.
Research Scholar (July 2011−May 2014) at IIT-BHU, Varanasi, India.
Programmer Analyst in **Cognizant Technologies India Pvt. Ltd (CTS),** Chennai from June-2010 to Oct -2011
Embedded Software Engineer in **Nalanda Telematics and Informatics Limited (NTIL),** Hyderabad from May-2007 to June-2008

Education

Doctor of Philosophy (Ph.D.: Image Processing), 2014
Thesis Title: Design and Enhancement of Feature Descriptors for Image Indexing and Retrieval
Guide Name: Prof. S. K. Nagar
Institution/ Organization/ University: Systems Engineering, IIT-BHU, Varanasi
Master of Technology (MTech): Systems Engineering, 2010 (CGPA 8.25/10), IIT-BHU, Varanasi
Bachelor of Engineering (B.E.): Electrical and Electronics Engineering, 2007, Andhra University

Administrative Experience

Adjunct Faculty: Department of Computer Science and Engineering, IIIT-Kota, Rajasthan, India
Co-Coordinator for Training and Placements (2016-2017)
Hostel Warden (2014-2016)
TEQIP-III Nodel Officer (2019-Present)
Member, Department PG and UG Committee, Dept. of CSE

Papers Published, Accepted in International Journals

1) Monu Verma, Satish Reddy, Yashwant Meedimala, Murari Mandal, **Santosh Kumar Vipparthi,** "AutoMER: Spatiotemporal Neural Architecture Search for Micro Expression Recognition" *IEEE Transactions on Neural Networks and Learning Systems,* **(Accepted), 2021. (IF-8.793)**

2) Murai Mandal, **Santosh Kumar Vipparthi,**" An Empirical Review of Deep Learning Frameworks for Change Detection: Model Design, Experimental Frameworks, Challenges and Research Needs" *IEEE Intelligent Transportation Systems Transactions* **(IF-6.319) (Accepted)**

3) Murari Mandal, Vansh Dhar, Abhishek Mishra, **Santosh Kumar Vipparthi**, Mohamed Abdel-Mottaleb,"3DCD: A Scene Independent End-to-End Spatiotemporal Feature Learning Framework for Change Detection in Unseen Videos" *IEEE Transactions on image processing*, 30, 546 - 558, **2020. (IF-9.34)**

4) Murari Mandal, **Santosh Kumar Vipparthi,** "Scene Independency Matters: An Empirical Study of Scene Dependent and Scene Independent Evaluation for CNN based Change Detection" *IEEE Intelligent Transportation Systems Transactions* **(IF-6.319) (Accepted)**

5) Monu Verma, **Santosh Kumar Vipparthi**, Girdhari Singh,"AffectiveNet: Affective-Motion Feature Learning for Micro Expression Recognition", *IEEE Multimedia,* **2020***, (***IF-4.962).**

6) Monu Verma, **Santosh Kumar Vipparthi**, Girdhari Singh, Subrahmanyam Murala, "LEARNet: Dynamic Imaging Network for Micro Expression Recognition*" IEEE Transactions on image processing*, 29, 1618-1627, **2019. (IF-9.34)**

7) Murari Mandal, Vanshdhar, Abhisheak, **Santosh Kumar Vipparthi,**"3DFR: A Swift 3D Feature Reductionist Framework for Scene Independent Change Detection, *IEEE Signal Processing Letters,26(12), 1882-1886,* **2019**. **(IF-3.105)**

8) Murari Mandal, Manal Shah, Prashant Meena, Sanhita Devi, **Santosh Kumar Vipparthi**, "AVDNet: A SmallSized Vehicle Detection Network for Aerial Visual Data**"** *IEEE Geoscience and Remote Sensing Letters*, 17(3), 494-498, **2019. (IF-3.833)**

9) Monu Verma, **Santosh Kumar Vipparthi**, Girdhari Singh, "HiNet: HiNet: Hybrid Inherited Feature Learning Network for Facial Expression Recognition" *IEEE Letters of the Computer Society*, 2(4), 36-39, **2019.**

10) Murari Mandal, Monu Verma, Mallika Chaudhary, **Santosh Kumar Vipparthi**, Subrahmanyam Murala, Kranthi Kumar Devarasetti, "RADAP: Regional Adaptive Affinitive Pattern with Logical Operators for Facial Expression Recognition" *IET Image Processing, (IEEE, IET)*, vol. 13, no. 5, pp. 850-861, 18 4 **2019 (IF-2.004)**

11) Maheep Singh, Mahesh C Govil, Emmanuel Pilli, **Santosh Kumar Vipparthi**, "SOD-CED: Salient Object Detection for Noisy Images using Convolution Encoder Decoder" *IET Computer Vision*, (IEEE, IET) 13(6), 578-587, **(IF-1.648), (2019)**

12) Murari Mandal, Mallika Chaudhary, **Santosh Kumar Vipparthi**, Subrahmanyam Murala, Anil Balaji Gonde, Syam Krishna Nagar, "ANTIC: Antithetic Isomeric Cluster Patterns for Medical Image Retrieval and Change Detection" *IET Computer Vision, (IEEE, IET)* vol. 13, no. 1, pp. 31-43, 2 2019 (IF-**1.648**)

13) **Santosh Kumar Vipparthi**, Subramanian Murala, Anil Balaji Gonde, Q. M. Jonathan Wu, Local Directional Mask Maximum Edge Patterns for Image Retrieval and Face Recognition, 10(3), 182-192, *IET Computer Vision,* **(IEEE, IET)**, **(2016), (IF- 1.648)**.

14) **Santosh Kumar Vipparthi**, Subrahmanyam Murala, S. K. Nagar and A. B. Gonde "Local Gabor Maximum Edge Position Octal Patterns for Image Indexing and Retrieval", *Neurocomputing*, 167, 336:345. **Elsevier (2015), (IF-4.438)**.

15) **Santosh Kumar Vipparthi**, S. K. Nagar," Expert Image Retrieval system using Directional Local Motif XOR Patterns", *Expert Systems with Applications*, 41 (2014). 8016-8026. **Elsevier**, (**2014), (IF-5.452)**.

16) **Santosh Kumar Vipparthi**, S. K. Nagar," Multi-joint Histogram based Modelling for Image Indexing and Retrieval", *Computers and Electrical Engineering* 40 (2014) 163–173, **Elsevier**, **(2014), (IF-2.663)**.

17) **Santosh Kumar Vipparthi**, S. K. Nagar, "Dual directional Multi-Motif XOR Patterns: A new Descriptor for Image Indexing and Retrieval", *International Journal for Light and Electron Optics*, 126 (15), 1467-1473, **Elsevier, (2015) (IF-2.187)**.

Papers published in the International Conferences

1) Monu Verma, Ayushi Gupta, **Santosh Kumar Vipparthi**, "One for All: An End-to-End Compact Solution for Hand Gesture Recognition," in International Joint Conference on Neural Networks (IJCNN), 2021, **(Accepted) (Core A)**

2) Murari Mandal, Lav Kush Kumar, **Santosh Kumar Vipparthi**, "MOR-UAV: A Benchmark Dataset and Baselines for Moving Object Recognition in UAV Videos" *ACM International Conference on Multimedia* (**ACMMM-20**), Seattle, United States, 2020, **(Accepted) (Core A*)**

3) Monu Verma, **Santosh Kumar Vipparthi** and Girdhari Singh,"Non-Linearities Improve OrigiNet Based on Active Imaging for Micro Expression Recognition" *The International Joint Conference on Neural Networks* (**IJCNN- 2020**) by IEEE at Glasgow (UK), **(Accepted) (Core A)**

4) Murari Mandal, Lav Kush Kumar, Mahipal Singh Saran, **Santosh Kumar Vipparthi,**"MotionRec: A Unified Deep Framework for Moving Object Recognition" *IEEE Winter Conference on Applications of Computer Vision* **(WACV 2020),** (pp. 2734-2743). **(Core A)**

5) Kuldeep Marotirao Biradar, Ayushi Gupta, Murari Manadal, **Santosh Kumar Vipparthi,** "Challenges in Time-Stamp Aware Anomaly Detection in Traffic Videos" *IEEE Conference on Computer Vision and Pattern Recognition Workshops* (pp. 13-20) (**CVPRW-2019). (Core A)**

6) Murari Mandal, Manal Shah, Prashant Meena, **Santosh Kumar Vipparthi**, "SSSDet: Simple Short and Shallow Network for Resource Efficient Vehicle Detection in Aerial Scenes" In *2019 IEEE International Conference on Image Processing (ICIP)* (pp. 3098-3102), **(2019)**. **(Core B)**

7) Murari Mandal, Prafulla Saxena, **Santosh Kumar Vipparthi**, Subrahmanyam Murala,"CANDID: Robust Change Dynamics and Deterministic Update Policy for Dynamic Background Subtraction" In *2018 24th International Conference on Pattern Recognition (ICPR)* (pp. 2468-2473). **(Core B)**

8) Monu Verma, Prafulla Saxena, **Santosh Kumar Vipparthi**, Girdhari Singh, "QUEST: Quadrilateral Senary bit Pattern for Facial Expression Recognition" In *2018 IEEE International Conference on Systems, Man, and Cybernetics (SMC)* (pp. 1498-1503). at Miyazaki, Japan **(2018) (Core B)**

9) Murari Manadal, Vansh Dhar, Abhishek Mishra, **Santosh Kumar Vipparthi**, "3D CNN based Change Detection" https://www.nvidia.com/en-us/gtc/poster-gallery/intelligent-machines-and-iot/

10) Monu Verma, Jaspreet Singh, **Santosh Kumar Vipparthi**, Girdhari Singh, "EXPERTNet: Exigent Features Preservative Network for Facial Expression Recognition" 11th Indian Conference on Computer Vision, Graphics and Image Processing **(ICVGIP)**, IIIT Hyderabad, (**2018), (Accepted)**

Conferences / Workshops Organised

➢ Five Day Faculty Workshop on **Joint Winter Faculty Development Programme on Deep Learning and Applications** collaboration of E&ICT Academy on 09-12-19 to 13-12-19 at Malaviya National Institute of Technology.

➢ Conducted an International Conference on **Fourth International Conference on Computer Vision & Image Processing (CVIP-19)** as Organising Chair at Malaviya National Institute of Technology Jaipur, Jaipur, India from 27-09-2019 to 29-09-2019

➢ Conducted an International Conference on **4th International Conference on Internet of Things and Connected Technologies (ICIoTCT), 2019** as General Chair at Malaviya National Institute of Technology (MNIT), Jaipur, India from 09-05-2019 to 10-05-2019.

➢ Five Day Faculty Workshop on ANN and Deep Learning with collaboration of E&ICT Academy on 11-06-18 to 15-06-18 at Malaviya National Institute of Technology.

➢ Two Week workshop on Introduction to Data Structures and Programming in C with collaboration of E&ICT Academy on 01st to 10th July 2017 at Malaviya National Institute of Technology.

➢ Five Day Workshop on Parallel Computing is jointly organized by MNIT, E&ICT and RTU Kota at Malaviya National Institute of Technology on 28-09-2017 to 02-10-2017.

➢ Five-day National Workshop on Recent Advances in Engineering and Medical Imaging Techniques (RAEMIT-16) is jointly organized by MNIT & IIIT Kota at Malaviya National Institute of Technology on April 12- 16th, 2016.

➢ One-day Workshop on Real Time Embedded Systems & Robotic Applications at Malaviya National Institute of Technology on Sep 24, 2015.

➢ Three Day National Workshop on DATA ANALYTICS at Malaviya National Institute of Technology from MAY 21-23, 2015.

Services to Research Community

Guest Editor: Journal of Healthcare and Engineering, Hindawi (SCI Journal – IF: 0.965)

Associated with the following reputed journals, as the technical committee member.

➢ CVPR
➢ WACV
➢ BMVC
➢ IEEE Transaction on Image Processing
➢ IEEE Transaction on Affective Computing
➢ IEEE Transaction on Intelligent Transportation System
➢ IET Image Processing
➢ IET Computer Vision
➢ Neurocomputing, Elsevier
➢ Computer and Electrical Engineering, Elsevier
➢ Digital Signal Processing, Elsevier

Conferences / Workshops Attended

➢ One Day Curriculum Development Workshop for Undergraduate Programme of Indian Institute of information Technology, Kota, Rajasthan from May 23, 2015

➢ Two Day Curriculum Development Workshop for Undergraduate Programme of Indian Institute of information Technology, Kota, Rajasthan from July 2-3, 2014

➢ One Week Teaching Pedagogy & Induction Training Programme at Malaviya National Institute of Technology from December 16-20, 2013

Sponsored / Consultancy Projects

S.no	Project Title	Type of the Project	Source	Total Amount	Period	Status
1	Timestamp aware Aberrant Detection and Analysis in Big Visual Data using Deep Learning Architecture	Sponsored	SERB-DST	19,88,000	03 Years	Completed
2	Third Party Inspection under Smart Raj Project (Phase – I)	Consultancy	RUDSICO, Govt. of Rajasthan	3,80,000	02 Years	In Progress
3	STP-On Computer Vision (Deep Learning, Machine Learning, Image/Video Processing)	Consultancy	TEQIP-III, MNIT	1,94,227	01 Year	Completed
4	Third Party Inspection of ICT Material for Jaipur Smart City Limited	Consultancy	Jaipur Smart City Limited - Municipal Corporation Jaipur	8,70,500	02 Years	Ongoing
4	NVIDIA GPU Grant	Sponsored	NVIDIA	1,50,000	Lifetime	

Professional Affiliation

➤ Senior Member, Institution of Electrical Electronics Engineers (IEEE - 93207193)

➤ Senior Member of Signal Processing Society   Senior Member of Biometrics Council

➤ Senior Member of IEEE Council on RFID

References

➤ Prof. S. K. Nagar, Professor, Department of Electrical Engineering, Indian Institute of Technology BHU, Varanasi-221005, India, Tel: +91-9839888628, Email: sknagar.eee@iitbhu.ac.in

➤ Prof. Vineet Sahula, Professor, Department of Electronics and Communication Engineering, Malaviya National Institute of Technology, Jaipur (MNIT), Jaipur-302017, Tel: +91-9549654227, Email: vsahula.ece@mnit.ac.in

➤ Dr. Subrahmanyam Murla, Associate Professor, Department of Electrical Engineering, Indian Institute of Technology Ropar (IIT Ropar), Rupnagar-140001, India, Tel: +91-9646455334, Email: subbumurala@iitrpr.ac.in