Prof. ALOK KUMAR SINGH KUSHWAHA Professor & Head

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Academic Qualification

• **Ph.D. in Computer Science and Engineering**Course CGPA- 9.5 out of 10
From IIT (BHU), Varanasi, India

Papers Published in SCI Journal

- Alok Kumar Singh Kushwaha, Rajeev Srivastava, "Automatic Moving Object Segmentation Methods Under Varying Illumination Conditions for Video Data: Comparative Study, and an Improved Method", Multimedia Tools and Applications, Springer, Volume 75, Issue 23, pp. 16209–16264, 2015, doi: 10.1007/s11042-015-2927-4 (Published). [SCI Impact Factor 2.77].
- Alok Kumar Singh Kushwaha, Rajeev Srivastava, "Multi-View Human Activity Recognition Based on Silhouette and Uniform Rotation Invariant Local Binary Patterns", Multimedia Systems, Springer, pp. 451-467, 2016, doi: 10.1007/s00530-016-0505-x (Published). [SCI Impact Factor 2.01].
- Alok Kumar Singh Kushwaha, Rajeev Srivastava, "Maritime Object Segmentation using Dynamic Background Modeling and Shadow Suppression", The Computer Journal, Oxfords, Volume 59, Issue 9, Pages 1303–1329, 2015, doi:10.1093/comjnl/bxv091 (Published). [SCI Impact Factor 1.0].
- Alok Kumar Singh Kushwaha, Rajeev Srivastava, "Framework for Dynamic Background Modeling and Shadow Suppression for Moving Object Segmentation in Complex Wavelet Domain", Journal of Electronic Imaging, SPIE, Volume 24(5) pp. 051005, 2015 doi: 10.1117/1.JEI.24.5.051005 (Published) [SCI Impact Factor 0.84].
- Alok Kumar Singh Kushwaha, Rajeev Srivastava, "Multi-View Human Activity Recognition System Based on Spatio-Temporal Template for Video Surveillance System", Journal of Electronic Imaging, SPIE, Volume 24(5), pp. 051004, 2015. doi: 10.1117/1.JEI.24.5.051004. (Published) [SCI Impact Factor 0.84].
- Alok Kumar Singh Kushwaha, Chandra Mani Sharma, Manish Khare, Om Prakash and Ashish Khare, "Adaptive Real-Time Motion Segmentation Technique Based on Statistical Background Model", The Imaging Science Journal (ISSN: 1743-131X), Vol. 62, No. 5, pp. 285-302, 2014. (Published) [SCI Impact Factor 0.506].

- Alok Kumar Singh Kushwaha, Rajeev Srivastava, "A Framework for Moving Object Segmentation using Dynamic Background Modeling and Shadow Suppression in Complex Wavelet Domain", Imaging Science Journal, Volume 64, pp. 267-278, 2017 (ISSN: 1743-131X), http://dx.doi.org/10.1080/13682199.2016.1176725. (Published). [SCI Impact Factor 0.506].
- Alok Kumar Singh Kushwaha, Rajeev Srivastava, "A Framework of Moving Object Segmentation in Maritime Surveillance inside a Dynamic Background", Transactions on Computational Science XXV Springer, LNCS 9030, pp. 35–54, 2015. (Published) [SCI Impact Factor – 0.15]
- Alok Kumar Singh Kushwaha, Jagwinder, Roshan Singh, Rajeev Srivastava "Depth based Enlarged Temporal Dimension of 3D deep Convolutional Network for Activity Recognition", Multimedia Tools and Applications, Springer, pp. 30599–30614, 2019. https://link.springer.com/article/10.1007%2Fs11042-018-6425-3 (Published) [SCI Impact Factor 2.77]
- Alok Kumar Singh Kushwaha, Roshan Singh, and Rajeev Srivastava, "Multi-View Human Activity Recognition System Based on Multiple Features for Video Surveillance System", Multimedia Tools and Applications, Springer, pp. 17165–17196, 2019. https://link.springer.com/article/10.1007%2Fs11042-018-7108-9 (Published) [SCI Impact Factor 2.77]
- Alok Kumar Singh Kushwaha, Roshan Singh, and Rajeev Srivastava, "Combining CNN Streams of Dynamic Image and Depth Data for Action Recognition in Real Time", Multimedia System, Springer, pp. 313–322, 2020 https://link.springer.com/article/10.1007/s00530-019-00645-5?shared-article-renderer (Published) [SCI Impact Factor 2.01]
- Alok Kumar Singh Kushwaha, Roshan Singh, and Rajeev Srivastava, "A Dual Stream Model for Activity Recognition: Exploiting Residual- CNN with Transfer Learning", Computer Methods in Biomechanics and Biomedical Engineering: Imaging, Vol 9, 20 https://doi.org/10.1080/21681163.2020.1805798 (Published) [SCI Impact Factor 1.08]
- Alok Kumar Singh Kushwaha, Neeraj Varshney, Brijesh Bakariya, Manish Khare, "Rule-based Multi-view human activity recognition system in Real time using skeleton data from RGB-D Sensor", Soft Computing, 2021 https://doi.org/10.1007/s00500-021-05649-w (Published)[SCI Impact Factor 3.05]
- Alok Kumar Singh Kushwaha, Neeraj Varshney, Brijesh Bakariya, Manish Khare, "Human Activity
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- Alok Kumar Singh Kushwaha, Neeraj Varshney, Brijesh Bakariya, Manish Khare, "Human activity recognition by combining external features with accelerometer sensor data using deep learning network model", Multimedia Tools and Applications, Springer, 2022, https://doi.org/10.1007/s11042-021-11313-0 (Published) [SCI Impact Factor 2.77]

- Ramakant Chandrakar, Rohit Raja, Rohit Miri, Upasana Sinha, Alok Kumar Singh Kushwaha, Hiral Raja, Balaji & Karthikeyan, "Enhanced the moving object detection and object tracking for traffic surveillance using RBF-FDLNN and CBF algorithm", Expert Systems With Applications, Elsevier, Volume 191, 2022. https://doi.org/10.1016/j.eswa.2021.116306 (Published) [SCI Impact Factor 6.95]
- Alok Kumar Singh Kushwaha, Roshan Singh, and Rajeev Srivastava, "Recent Trends in Human Activity Recognition- A Comparative Study", Cognitive Systems Research, Elsevier, 2022, (Accepted) [SCI Impact Factor 3.52]
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- Sonika Jindal, Monika Sachdeva, and **Alok Kumar Singh Kushwaha**. "Human Activity Recognition using Ensemble Convolutional Neural Networks and Long Short-Term Memory [J]".Int J Performability Eng, Totem (2022), 18(9): 660-667.. SCI Impact Factor 1.14]
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- S. Jindal, M. Sachdeva, and **Alok Kumar Singh Kushwaha**, "**Performance evaluation of machine learning based voting classifier system for human activity recognition,"** Special Issue on Machine Learning (CS), Kuwait Journal of Science, Elsevier-Special Issue On Machine Learning for Big Data, Archives, (2022). [Online]. DOI: 10.48129/kjs.splml.0020.[SCI Impact Factor –0.88]
- S. Jindal, M. Sachdeva, and Alok Kumar Singh Kushwaha, "Quantum behaved Intelligent Variant of Gravitational Search Algorithm with Deep Neural Networks for Human Activity Recognition," Kuwait Journal of Science, Elsevier vol. 50, no. 2A, (2023). [Online]. DOI: 10.48129/kjs.18531. [SCI Impact Factor –0.88]
- R. Shrivastava, V. Tiwari, S. Jain, B. Tiwari, **Alok Kumar Singh Kushwaha**, and V. P. Singh, "A roleentity based human activity recognition using inter-body features and temporal sequence memory," IET ImageProcessing, John Wiley & Sons Inc. first published on (17 March 2022). [Online]. DOI: 10.1049/ipr2.12472. [SCI Impact Factor 2.73]
- Ankit Kumar, KamredUdham Singh, Mukesh Kumar Singh, **Alok Kumar Singh Kushwaha**, Abhishek Kumar, Shambhu Mahato, **"Design and Fabrication of Solar Dryer System for Food Preservation of Vegetables or Fruit"**, Journal of Food Quality, Wiley-Blackwell vol. (2022), Article ID 6564933, 14 pages, 2022. [SCI Impact Factor 3.20]
- Singh, Roshan, Alok Kumar Singh Kushwaha, Srivastava, Rajeev. "Multi-view recognition system for human activity based on multiple features for video surveillance system." Multimedia Tools and Applications. Springer, (2019) 78. 10.1007/s11042-018-7108-9. [SCI Impact Factor 2.53].
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- Chandni, M. Sachdeva, and **Alok Kumar Singh Kushwaha**, "**Deep learning for tumour malignancy detection and classification,**" Advances and Applications in Mathematical Sciences, Mili, vol. 21, no. 10, pp. 5769-5778, (Aug. 2022).

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- Chandra Mani Sharma, Alok Kumar Singh Kushwaha, Rakesh Roshan, Rabins Porwal and Ashish Khare, "Intelligent Video Object Classification Scheme using Offline Feature Extraction and Machine Learning based Approach", International Journal of Computer Science Issues, vol. 9, no. 3, pp. 247-256, 2012 [ISSN No. 1694-0814]. (Published)
- Om Prakash, Manish Khare, Chandra Mani Sharma, **Alok Kumar Singh Kushwaha**, "Moving Object Tracking in Video Sequences based on Energy of Daubechies Complex Wavelet Transform", International Journal of Computer Science Issues , pp. 6-10, 2012 [ISBN: 973-93-80871-12-3]. (Published)
- Alok Kumar Singh Kushwaha, Rajeev Srivastava, "A Framework for Human Activity Recognition Using Pose Feature for Video Surveillance System", International Journal of Computer Application, pp. 6-10, 2017. (Published)
- Alok Kumar Singh Kushwaha, Harpreet Singh, Dinesh Gupta, "A Recent Survey on Multiclass Object
 Recognition and Classification based on Machine learning methods",
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 2018. (Published)
- Alok Kumar Singh Kushwaha, Chandani, "Deep Learning Trends for Video Based Activity Recognition: a Survey", International Journal of Sensors, Wireless Communications and Control (SWCC), Volume 8, Issue 3, 2018. http://www.eurekaselect.com/164184/article (Published) (Scopus).
- Alok Kumar Singh Kushwaha, Rajat Khurana, "Fusing Dynamic Images and Depth Motion Maps for Action Recognition in Surveillance Systems", International Journal of Sensors, Wireless Communications and Control (SWCC), 2020 https://www.eurekaselect.com/node/177273/article/fusing-dynamic-images-and-depth-motion-maps-for-action-recognition-in-surveillance-systems (Published) (Scopus).

Papers Presented/Published in International Conferences

- Alok Kumar Singh Kushwaha, Rajeev Srivastava, "A Framework for Moving Object Segmentation under Rapidly Changing Illumination Conditions in Complex Wavelet Domain," Futuristic Trends in Computational analysis and Knowledge management, Feb 25-27, 2015 at Amity University, Greater Noida, India, pp. 148–153 (DOI: 10.1109/ABLAZE.2015.7154985).
- Chandramani Sharma, Alok Kumar Singh Kushwaha, Ashish Khare and Sanjay Tanwani "An Automatic Machine Learning And Particle Filtering Based Approach To Real Time Human Tracking In Video" in Proc. IEEE Conference on Signal Processing and Real Time Operating System(SPRTOS 2011), pp. 290-295, HBTI Kanpur, Uttar Pradesh, March 26-27, 2011.

- Chandra Mani Sharma, **Alok Kumar Singh Kushwaha**, Swati Nigam, Ashish Khare, "Automatic Human Activity Recognition in Video using Background Modeling and Spatio-temporal Template Matching based Technique", In Proc. ACM International Conference on Advances in Computing and Artificial Intelligence (ACAI 2011), Punjab, pp. 97-101, 21 July,2011.
- Chandra Mani Sharma, **Alok Kumar Singh Kushwaha**, Swati Nigam, Ashish Khare, "On Human Activity Recognition in Video Sequences," in proc. of IEEE 2nd International conference on Computer and Communication Technology, MNNIT Allahabad, India during Sep. 15-17, pp. 152-158, 2011.
- Alok Kumar Singh Kushwaha, Anand Singh Jalal, "A Robust Object Classification Approach for Visual Surveillance", in proceeding of International Conference on Signal, Image and Video Processing (ICSIVP 2012), pp. 109-113, January 13-15, 2012 at Indian Institute of Technology, Patna.(ISBN: 978-93-81583-19-7).
- Alok Kumar Singh Kushwaha, Chandra Mani Sharma, Manish Khare, Rajneesh Kr Srivastava, Ashish Khare, "Automatic Multiple Human Detection and Tracking for Visual Surveillance System", in proceeding of IEEE International Conference on Informatics, Electronics & Vision (ICIEV12), pp. 326-331, May 18-19, 2012 in Dhaka, Bangladesh.
- Alok Kumar Singh Kushwaha, Mahesh kumar Kolekar and Ashish Khare, "Vision based method for object classification and multiple human activity recognition in video surveillance system", in proc. of CUBE International Information Technology Conference, 03-05 September, 2012, pp. 47-52, Pune, India.
- Alok Kumar Singh Kushwaha, Om Prakash, Ashish Khare and Mahesh k. kolekar, "Rule based Human Activity Recognition for Surveillance System", published in 4th International Conference on Intelligent Human Computer Interaction 2012 (IHCI 2012), Indian Institute of Technology Kharagpur, India during 27 29 December, 2012, pp. 1-6.
- Manish Khare, Alok Kumar Singh Kushwaha, Rajneesh Kumar Srivastava, and Ashish Khare, "An Approach towards wavelet transform based multiclass object classification", in proceeding of IEEE 6th International Conference on Contemporary Computing (IC3 2013), pp. 365-368, 8-10 August, 2013, Jaypee Institute of Information Technology, Noida, India.
- Alok Kumar Singh Kushwaha, Rajeev Srivastava, "Human Activity Recognition Using Object Silhouettes for Automatic Video Surveillance System," In Proc. International Conference on Recent cognizance in wireless communication & image processing-ICRCWIP-2014.
 - **Alok Kumar Singh Kushwaha** and Rajeev Srivastava, "Performance Evaluation of Various Moving Object Segmentation Techniques for Intelligent Video Surveillance System," In Proc: IEEE International Conference on Signal Processing & Integrated Networks (SPIN 2014), 20-21 Feb'2014, Noida, India, pp. 196-201. (DOI: 10.1109/SPIN.2014.6776947).
- Alok Kumar Singh Kushwaha and Rajeev Srivastava, "Complex Wavelet Based Moving Object Segmentation using Approximate Median Filter Based Method for Video Surveillance," In Proc. 4th IEEE International Advanced Computing Conference, Gurgaon, India, 21-22 Feb' 2014, pp. 973-978. (DOI: 10.1109/IAdCC.2014. 6779455).
- Ishan Agarwal, **Alok Kumar Singh Kushwaha**, Rajeev Srivastava, "Weighted Fast Dynamic Time Warping Based Multi-View Human Activity Recognition Using a RGB-D Sensor", Published in NCVPRIPG 2015, Patna, India during 16-19 December, pp. 1-4. (DOI: 10.1109/NCVPRIPG.2015.7490046).

- Alok Kumar Singh Kushwaha, Jagwinder Dhillon and Chandani "A Recent Survey for Human Activity Recognition based on Deep Learning Approach" presented at Shimla, Fourth International Conference on Image Information Processing (ICIIP), Shimla, pp. 1-5, 2017.
- Alok Kumar Singh Kushwaha, Rajat Khurana and Chandani "Delving Deeper with Dual-Stream CNN for Activity Recognition" presented at International Conference on Emerging Trends Communication, Computing and Electronic, University of Allahabad, 2018.
- Alok Kumar Singh Kushwaha, Kamaljit Kaur and Rajat Khurana,"Deep Survey on Visual Object Tracking in Surveillance Environment", Accepted in 3rd IEEE International Conference on Research in Intelligent and Computing in Engineering, 2018.
- Alok Kumar Singh Kushwaha, Harpreet Singh, Dinesh Gupta, "Multiclass Object Recognition and Classification using Boosting Technique" IEEE 9th international conference on computing, communication and networking technologies (ICCCNT), IISC Bengaluru, 10-12 July 2018. (**Published**)
- Alok K. Singh Kushwaha, Jagwinder, "Temporal Extension of 3D convolution on Depth Sequences for Activity Recognition", 4th International Conference on Computing, Communication, Control And Automation (ICC3A-2018), Aug 6-18, 2018, PCCOE, Pune, India. (**Published**)
- Alok Kumar Singh Kushwaha, Rajat Khurana, "Deep Learning Approaches for Human Activity Recognition in Video Surveillance A Survey", First International Conference on Secure Cyber Computing and Communications, NIT Jalandhar, December 15-17, 2018. (Published)
- Alok Kumar Singh Kushwaha, Sandeep Kaur, "A Comparative study of various Video Tampering detection methods", First International Conference on Secure Cyber Computing and Communications, NIT Jalandhar, December 15-17, 2018. (Published).
- Alok Kumar Singh Kushwaha, Neeraj Varshney, "Analysis of double compression detection in a video", IEEE- ISCON2019 to be organized by GLA University Mathura, India during November 21-22, 2019. (Published).
- Alok Kumar Singh Kushwaha, Sonika Jindal, Monika Sachdeva, "Deep Learning for Video based Human Activity Recognition: Review and Recent Developments" International Conference on Computational Intelligence and Emerging Power System organized by Engineering College Ajmer during March 09-10, 2021 (Published).
- Alok Kumar Singh Kushwaha, Sonika Jindal, Monika Sachdeva, "A Systematic Analysis of the Human Activity Recognition Systems for Video Surveillance", ICWSNUCA-2021 organized by Gokaraju Rangaraju Institute of Engineering & Technology, Hyderabad, India, during 26-27 February 2021 (**Published**).
- Alok Kumar Singh Kushwaha, Neeraj Varshney, "Mobile sensor behaviour for Human activity recognition using Deep Convolution neural network", International Conference on Computing, Networks & Renewable Energy 2021 to be organized by IKGPTU, Jalandhar, India during August 08, 2021 (**Published**).
- Alok Kumar Singh Kushwaha, Neeraj Varshney, "Human activity recognition using sensor data: A survey", 2nd International Conference on Recent Innovations in Science, Engineering & Technology-2021, to be organized by Integral university, Lucknow, India during July 23, 2021 (**Published**).

Papers Presented/Published in National Conferences

 Alok Kumar Singh Kushwaha, Chandra Mani Sharma, and Ashish Khare, "An Adaptive Real-time Motion Segmentation Technique Based on Average Frame Differencing," In the Proceedings of National Conference on Impact of Physics on Biological Science, pp.102-108, ECC Allahabad, 26thAugust, 2010.

Book Published

Sanjay Kumar, Rohit Raja, Alok Kumar Singh Kushwaha, Saurabh Kumar, Raj Kumar Patra, "Green Computing and its Applications", is to be published by Nova Science Publication (Scopus Index)
 DOI: https://doi.org/10.52305/ENYH6923

Book Chapter Published

• Alok Kumar Singh Kushwaha, and Rajeev Srivastava, "Recognition of Humans and Their Activities for video Surveillance," in Research Developments in Computer Vision and Image Processing: Methodologies and Applications, R. Srivastava, S. K. Singh, K. K. Shukla (Indian Institute of Technology, (BHU), India)

National Patent Filed, Published and Granted: -

Indian Patent Granted: An Unmanned Aerial Vehicle For Surveillance, Patent Number 202021045472.

Indian Patent Published: Theft Vehicle detection using digital signature based ECU and Image Processing, Patent Number: 202021025200.

Indian Patent Published:- An Artificial Intelligence And Machine Learning Based Automatic Penalty Device and Its Method.

International Patent Published and Granted: -

Australian Patent Granted:- SBDA- Secured Bra for women safety, smart and secured bra for women safety based on Deep Learning Algorithms, Patent Number 2020102636.

Australian Patent Granted:- A System And A Method For Automated Irrigation Using Internet Of Things, Patent Number 2020104385

Australian Patent Granted:- Holonomic Drive Conveyor System And Its Method Using IoT, Patent Number 2020104116

Australian Patent Granted:- Self-Cleaning And Germ-Killing Revolving Public Toilet For Covid 19, Patent Number 2021100059

Australian Patent Granted: - Smart Bathroom System And Method, Patent Number 2021100780

Australian Patent Granted:- Delicate Vibratory Instrument For Neonates Oral Motor Simulation, Patent Number 2021101385**Australian Patent Granted:-**A SYSTEM AND METHOD FOR PREVENTING CORONA VIRUS TRANSMISSION, Patent Number 2021102958

SWAYAM-NPTEL

Working as a Subject Matter Expert for the SWAYAM-NPTEL UG/PG course ANIMATIONs.

Research Projects (Funded)

An AI Powered Surveillance system for livestock behaviour detection in real-time and analytical insights generation software suite - Principle Investigator Funding Agency: Ministry of Electronics and Information Technology, Govt. of India Grant Received: 5.75 Lacs

FDP/Short-Term Courses Organized:

- Organize one week ATAL-AICTE FDP Program on Data Sciences during 12th- 16th Oct 2020 in GGV Bilaspur.
- Organize one week FDP Program on Deep Learning and Machine Learning Applications in Computer Vision during 12 August, 2020 to 18 August, 2020 organized by GGV Bilaspur and Electronics and ICT Academy, NIT Patna
- Organize two week ATAL-AICTE FDP Program on Computer Vision during 14th- 26th Nov 2022 in GGV Bilaspur.

Experience in Administration:

- Head of Department in the Department of CSE, GGV Bilaspur
- NAAC Core Committee Member in GGV Bilaspur
- Chairman, BOS in the Department of CSE, GGV Bilaspur
- Nodal Officer, Incubation Centre, GGV Bilaspur
- Nodal Officer, IPR Cell, GGV Bilaspur
- Nodal Officer, MOOCs, GGV Bilaspur
- Coordinator, Placement Cell, SoS(E&T), GGV Bilaspur
- Core Member, IT Cell, GGV Bilaspur
- Core Member, NEP-2020, GGV Bilaspur
- Co-cordinator, TEC, GGV Bilaspur
- Co-ordinator, Chandrayan Utsav

Gues Surve 2.77)	t Editor, Special issue on "Visual and Sensory Data Processing for Real Time Intelligent Editor, System" of Multimedia Tools and Applications, Springer (SCI Impact Factor:
	t Editor, Special issue on "Edge Computing and Machine Learning for Improving Healthcare ces" of Computers, Materials & Continua, Tech Press (SCI Impact Factor: 3.79).