Dr. Aditya Nigam

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Education

- **Indian Institute of Technology** Kanpur, INDIA
  M.Tech and Ph.D., Computer Science, and Engineering *Dec. 2007 - Feb. 2015*
    - **Ph.D Thesis**: Ph.D. Thesis: "Multimodal Biometric based Recognition System", completed in 2015 under the supervision of Dr. Phalguni Gupta from IIT Kanpur.
    - **M.Tech. Thesis**: M.Tech. Thesis: "A Novel Method for Face Recognition using NUP measure", Completed in 2009 under the supervision of Dr. Phalguni Gupta from IIT Kanpur.

Work Experience

- **Indian Institute of Technology Mandi** Mandi, INDIA
  Associate Professor (Currently) *June 2022 - Till date*
    - **Assistant Professor** from July 2016 to June 2022
    - **Visiting Assistant Professor** from Aug 2014 to July 2016
    - Associated with undergraduate and graduate teaching, Research guidance, and Institutional administrative activities.

Career Summary

- **Publication Highlights**:

    - **Conferences**: Published in top-tier vision conferences such as, CVPR-22, WACV-22, ICCV-21, ECCV-20, ACMMM-20, ACCV-20, IJCB-20, BMVC-19, ISBI-21,22,23.
    - **Journals**: Published in reputed journals such as the Journal of, Medical Image Analysis (IF: 13.09), Computer Methods and Programs in Bio-medicine (IF: 7.07), Neurocomputing (IF: 5.71).
    - **Google Scholar**: Citation: 1252, h-index: 20, i-10 index: 41.

- **Research Grant**: Received around 80+ lacs INR (100K USD) research grant from Indian government based funding agencies such as SERB, DRDO, etc.

- **Subjects Taught**: Deep Learning, Advance Deep Learning, Data Science, System Practicum, Operating Systems, Computer Networks.

PG Students

- **Mrs. Avantika Singh**: Ph.D. Thesis: "Application of Deep Learning in Biometrics: Classification, Cancellation, and Indexing". [Graduated]

- **Mr. Aman Kamboj**: Ph.D. Thesis: "Personal Authentication system using Unconstrained Ear Images". [Graduated]

- **Mrs. Preethi Srinivasan**: M.S Thesis: "Medical Imaging Techniques for transformation and Inferences Using Deep Learning". [Graduated]

- **Mr. Daksh Thapar**: Ph.D. Thesis: "Human authentication via. Gait analysis from third and first person (Egocentric) videos". [Submitting in the month of April-2023]

- **Mr. Ranjeet R. Jha**: Ph.D. Thesis: "Diffusion Magnetic Resonance Imaging Analysis and Enhancement using Deep Learning Techniques". [Submitting in the month of April-2023]

- **Junior Graduate Students**: Miss Geetanjali Sharma, Mrs. Soma Chakraborty, Mr. Anurag Panday, Mr. Munish Dharoch, Mr. Pushap Singh, Mr. Abhishek Tandon.

Externally Funded Projects

- **GAIT recognition on Ego-centric cameras and Surveillance Cameras** 14 Months Project
  Funded by DRDO labs *Budget : 48 Lakhs*
  - **GAIT surveillance using third and first person videos.**

- **Analyzing Diffusion Weighted Images for Indian Clinical Scenarios** 3 Years Project
  Accepted by SERB-CRG *Budget : 40 Lakhs (approx.)*
  - **An end-to-end computational pipeline for analyzing diffusion weighted images for Indian clinical scenarios.**

- **LakshmanRekha: A Home Quarantine Management Mobile Application** 1 Year Project
  Accepted by IIT Jodhpur (COMPLETED) *Budget : 10 Lakhs*
  - **Design Home Quarantine Management System.**

- **Network Analytic and Anomaly Detection** 3 Years Project
  Accepted under UAY Scheme (COMPLETED) *Budget : 140 Lakhs*
  - **Design of Advanced Big-Data Analytic in the CygNet Network Management System for Large Telecom Networks**
  - Worked as a Co-PI in this project.

- **Application of High Definition Fiber Tracking (HDFT)** 3 Years Project
  Accepted as SPARK Project (COMPLETED) *Budget : Travel Funding*
  - **Development and Neurosurgical Application of High Definition Fiber Tracking**
  - This is an international project accepted under the SPARK scheme.
  - Worked as Co-PI in this project with Dr. Ratish Kumar from IIT Kanpur.
  - US Team Members: Prof. Walter Schneider (PI) University of Pittsburgh, Dr. Sudhir Kumar Pathak (CO-PI) University of Pittsburgh
  - Automatically segmenting the human brain tractography-based neuronal fiber data into meaningful tracts. Also, estimating fiber density and connectivity of different brain regions useful to profile Alzheimer's and Parkinson's diseases.

List of selected journal articles

9. ■ Ranjeet Ranjan Jha, Sudhir K Pathak, BV Rathish Kumar, Arnav Bhavsar, Aditya Nigam
   "TrGANet: Transforming 3T to 7T dMRI using Trapezoidal Rule and Graph based Attention Modules" in The Journal of Medical Image Analysis, (Impact Factor: 13.09)

8. ■ Ranjeet Ranjan Jha, Sudhir K Pathak, Vishwesh Nath, Walter Schneider, BV Rathish Kumar, Arnav Bhavsar, Aditya Nigam *"Undersampled Single-shell to MSMT fODF Reconstruction using CNN-based ODE Solver"* in The Journal of Computer Methods and Programs in Bio-medicine, (Impact Factor: 7.07)

7. ■ Avantika Singh, Chirag Vashist, Pratyush Gaurav, Aditya Nigam *"A generic framework for deep incremental cancelable template generation"* in The Journal of Neurocomputing, (Impact Factor: 5.71)

6. ■ Avantika Singh, Ashish Arora and Aditya Nigam, *"Cancelable Iris template generation by aggregating patch level Ordinal relations with its holistically extended performance and security analysis"* in Journal of Image and Vision Computing, (2020) (Impact Factor: 3.86)

5. ■ Anshul Thakur, Daksh Thapar, Padmanabhan Rajan and Aditya Nigam, *"Deep metric learning for bioacoustic classification: Overcoming training data scarcity using dynamic triplet loss"* in Journal of Acoustical Society of America, (2019) (JASA) , (Impact Factor: 1.9)

4. ■ Daksh Thapar, Gaurav Jaswal, Aditya Nigam and Chetan Arora, *"Gait metric learning Siamese network exploiting dual of spatio-temporal 3D-CNN intra and LSTM based inter gait-cycle-segment features"* in Journal of Pattern Recognition Letters, (2018) Elsevier (Impact Factor: 2.8)

3. ■ Avantika Singh and Aditya Nigam, *"Effect of identity mapping, transfer learning and domain knowledge on the robustness and generalization ability of a network: A biometric based case study"* in Journal of Ambient Intelligence and Humanized Computing, (2018) Springer (Impact Factor: 3.3)

2. ■ Aditya Nigam, Kamlesh Tiwari and Phalguni Gupta, *"Multiple Texture Information Fusion for Finger-Knuckle-Print Authentication System"* in Journal of Neurocomputing (2016), Elsevier (Impact Factor: 5.71)

1. ■ Aditya Nigam and Phalguni Gupta, *"Designing An Accurate Hand Biometric Based Authentication System Fusing Finger Knuckleprint with Palmprint"* in Journal of Neurocomputing (2015), Elsevier (Impact Factor: 5.71)

List of selected conference papers

18. Ranjeet Ranjan Jha, Sudhir K Pathak, Walter Schneider, BV Rathish Kumar, Arnav Bhavsar, Aditya Nigam *"PA-GAN: Parallel Attention-based GAN for Enhancement of fODF"* in (**ISBI-2023**), 18-21 April 2023, Cartagena de Indias, Colombia

17. Daksh Thapar, Aditya Nigam, Chetan Arora, *"Merry Go Round: Rotate a Frame and Fool a DNN"* in the International CVPR (**CVPR-2022**), 19-24 June 2022, New Orleans, USA

16. Ranjeet R. Jha, Sudhir K Pathak, Walter Schneider, BV Rathish Kumar, Arnav Bhavsar, Aditya Nigam *"LFANET: Transforming 3T Single-Shell to 7T Multi-Shell DMRI Using Deep Learning Based Leapfrog and Attention"* in (**ISBI-2022**), 28-31 March 2022, Kolkatta, India

15. Rohit Bharadwaj, Gaurav Jaswal, Aditya Nigam, Kamlesh Tiwari *"Mobile based Human Identification using Forehead Creases: Application and Assessment under COVID-19 Masked Face Scenarios"* in the (**WACV-2022**), 04-08 Jan 2022, Hawaii, USA

14. Daksh Thapar, Aditya Nigam, Chetan Arora, *"Anonymizing egocentric videos"* in the (**ICCV-2021**), 10-17 Oct 2021, Virtual Conference

13. Ranjeet R. Jha, Hrithik Gupta, Aditya Nigam, Arnav Bhavsar, Sudhir Pathak, Walter Schneider, B. V. Rathish Kumar, *"Enhancing HARDI reconstruction from undersampled data via multi-context and feature inter-dependency GAN"* in the International Symposium on Biomedical Imaging (**ISBI-2021**), 13-16 April 2021, Nice, France

12. Preethi Srinivasan, Daksh Thapar, Arnav Bhavsar and Aditya Nigam, *"Hierarchical X-Ray Report Generation via Pathology tags and Multi Head Attention"* in 15th Asian Conference on Computer Vision (**ACCV-2020**), 30 November-4 December 2020, Kyoto, Japan

11. Daksh Thapar, Chetan Arora and Aditya Nigam, *"Recognizing Camera Wearer from Hand Gestures in Egocentric Videos"* in 28th ACM International Conference on Multimedia (**ACMMM-2020**), 12-16 October 2020, Seattle, USA

10. Avantika Singh, Pratyush Gaurav, Chirag Vashist, Aditya Nigam and Rameshwar Pratap Yadav *"IHashNet: Iris Hashing Network based on efficient multi-index hashing"* in International Joint Conference on Biometrics (**IJCB-2020**), 28 Sep - 1 Oct 2020, Houston, USA

9. Daksh Thapar, Chetan Arora, and Aditya Nigam, *"Is Sharing of Egocentric Video Giving Away Your Biometric Signature?"* in 16th European Conference on Computer Vision (**ECCV-2020**), 23-28 August 2020, Glasgow, UK

8. Ranjeet R. Jha, Aditya Nigam, Arnav Bhavsar, Sudhir Pathak, Walter Schneider, B. V. Rathish Kumar, *"Multi-Shell D-MRI Reconstruction via Residual Learning utilizing Encoder-Decoder Network with Attention (MSR-Net)"* in 42nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (**EMBC-2020**)

7. Suraj Kumar, Aayush Mishra, Saiful Islam and Aditya Nigam, *"VStegNET: Video Steganography Network using Spatio-Temporal features and Micro-Bottleneck"* in 30th British Machine Vision Conference (**BMVC-2019**), 9-12 September 2019, Cardiff, UK

6. Prabhjot Kaur, Aditya Sharma, Aditya Nigam and Arnav Bhavsar, *"MR-Srnet: Transformation of Low Field MR Images to High Field MR Images"* in IEEE International Conference on Image Processing (**ICIP**), 7-10 Oct 2018, Athens, Greece

5. Arjun Pankajakshan, Anshul Thakur, Daksh Thapar, Padmanabhan Rajan and Aditya Nigam, *"All-Conv Net for Bird Activity Detection-Significance of Learned Pooling"* in Interspeech (**INTERSPEECH-2018**), 02-06 Sep 2018, Hyderabad, India

4. Gaurav Jaswal, Aditya Nigam and Ravinder Nath, *"Deformable Multi-Scale Scheme for Biometric Personal Identification"* in IEEE International Conference on Image Processing (**ICIP**), 17-20 Sep 2017, Beijing, China

3. Aditya Nigam, Vamshi Krishna, Amit Bendale and Phalguni Gupta, *"Iris Recognition Using Block Local Binary Patterns and Relational Measures"* in International Joint Conference on Biometrics (**IJCB**), Clearwater, Florida, USA, 29 Sep - 2 Oct, 2014

2. Aditya Nigam and Phalguni Gupta, *"Quality Assessment of Knuckleprint Biometric Images"* in IEEE 20th International Conference on Image Processing (**ICIP 2013**), Melbourne, Australia, September 15-18, 2013

1. Aditya Nigam and Phalguni Gupta, *"Iris Recognition using Consistent Corner Optical Flow"* in 11th Asian Conference on Computer Vision (**ACCV 2012**), Daejeon, Korea, November 5-9, 2012.