Mr. Daksh Thapar

PhD Student
School of Computing and Electrical Engineering
Indian Institute of Technology Mandi - 175005

+919592563214
dak.thapar@gmail.com
https://dakshthapar.github.io

Research Projects

- **Anonymizing Egocentric Videos**
  Published in ICCV 2021 (oral presentation)
  - **Addressing the privacy concern in egocentric videos by succesfully removing the identity of camera wearer while preserving the integrity of egocentric videos**

- **LakshmanRekha: A Home Quarantine Management Mobile Application**
  Published in IEEE Consumer Electronics Magazine 2021
  Mentioned in national news[1]
  - **Designing AI based continuous biometric authentication home quarantine management system for Covid-19 and future pandemics**

- **Egocentric Biometric**
  Published in ECCV 2020 and ACM-MM 2020
  - **Creating a camera wearer recognition system from egocentric videos in various environments and activities**

- **Bio-acoustical Classification for Bird Species Detection**
  Published in The Journal of the Acoustical Society of America 2019 and InterSpeech 2018
  - **Creating bio-acoustical classification system for bird species detection using triplet loss for handling data scarcity**

- **Synthetic Sample Generation of HEp-2 Cell Images**
  Published in EMBC 2020
  - **Creating synthetic samples of minority mitotic patterns in HEp-2 cell images for aiding computer aided medical analysis**

- **Medical Image Captioning**
  Published in ACCV 2020
  - **Creating a automatic medical report generation system from chest X-Ray images**

Highlights and Achievements

- 4 paper in A* conferences in ICCV, ECCV, ACM-MM, and Interspeech
- ICCV paper accepted as oral presentation (only 3% papers selcted for oral)
- Awarded 2^{nd} position at 9^{th} Indian Doctoral Colloqium (IDC) 2019 at Institute for Development and Research in Banking Technology (IDRBT), Hyderabad. The award included a prize of Rs. 50,000.
- National news mention for our work on LakshmanRekha: A Home Quarantine Management Mobile Application[1]

[1] https://www.financialexpress.com/lifestyle/science/iit-mandi-researchers-develop-ai-driven-home-quarantine-management-application-for-covid-19-patients/2187792/

- Talk selected in Vision India at Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP) 2020 for our work on Egocentric Biometrics.

Work Experience

- **Indian Institute of Technology [During Ph.D]** Mandi, INDIA
  Teaching Assistant *Feb 2017 - Current*
  - Teaching assistantship for IIT Mandi undergraduate and postgraduate students
  - Subjects : Deep Learning and its Applications, Advance Deep Learning, C Programming, Data Science, Data Structure and Algorithms, System Practicum

Education

- **Indian Institute of Technology** Mandi, INDIA
  Ph.D., Computer Science and Engineering (Grade: 8.2 CPI) *Feb. 2017 - Current*
  - Ph.D Thesis: Identity and Attribute extraction from egocentric and surveillance videos

    Likely to submit my thesis by January 2022.

  - Relevant courses: Deep Learning, Computer Vision, Pattern Recognition, and Digital Image Processing.
- **University Institute of Engineering and Technology, Panjab University** Chandigarh, INDIA
  B.E., Computer Science and Engineering (Grade: 5.9 CPI) *2011-2015*
  - Relevant courses: Data Structures, Database Management, Automata Theory, Discrete Mathematics, Computer Networks, Compiler Design, Algorithm Design, Computer Graphics, Computer Organisation, Computer Architecture.
- **R.B. DAV SR. SEC. PUBLIC SCHOOL** Bathinda, INDIA
  SSC, Maths and Science (Grade: 82%) *2011*
- **St Joseph's Convent Sen Sec School** Bathinda, INDIA
  HSC, Maths and Science (Grade: 86%) *2009*

Interests

Academics: Deep Learning, Machine Learning, Computer vision, Video Analysis, Speech Analysis, Natural Language Processing, and Medical Image Analysis.

Sports: Table Tennis, Football, and Carrom.

Computers: Working and creating deep learning based frameworks using tensorflow and pytorch

Musical: Playin piano, Listening to old hindi and english music.

Other: Reading novels, PC Master Race

Journal Publications

3. ■ Gaurav Jaswal, Rohit J Bhardwaj, Kamlesh Tiwari, **Daksh Thapar**, Piyush Goyal and Aditya Nigam, ***"LakshmanRekha: AI-biometric driven Smartphone App for strict Post-COVID Home Quarantine Management"*** in the journal of IEEE Consumer Electronics Magazine, (2021) (Impact Factor: 4.01)
2. ■ 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)
1. ■ **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)

Conference Publications

14. **Daksh Thapar**, Aditya Nigam and Chetan Arora ***"Anonymizing Egocentric Videos"*** in International Conference on Computer Vision **(ICCV-2021)**, 11 October-17 October 2021 (Oral Presentation; 3% of total submissions) (A* conference)
13. Preethi Srinivasan, **Daksh Thapar**, Arnav Bhavsar and Aditya Nigam, ***"Hierarchical X-Ray Report Generation via Pathology tags and Multi Head Attention"*** in 15^{th} Asian Conference on Computer Vision **(ACCV-2020)**, 30 November-4 December 2020, Kyoto, Japan
12. **Daksh Thapar**, Chetan Arora and Aditya Nigam, ***"Recognizing Camera Wearer from Hand Gestures in Egocentric Videos"*** in 28^{th} ACM International Conference on Multimedia **(ACMMM-2020)**, 12-16 October 2020, Seattle, USA (A* conference)
11. **Daksh Thapar**, Chetan Arora and Aditya Nigam, ***"Is Sharing of Egocentric Video Giving Away Your Biometric Signature?"*** in 16^{th} European Conference on Computer Vision **(ECCV-2020)**, 23-28 August 2020, Glasgow, UK (A* conference)
10. Krati Gupta, **Daksh Thapar**, Arnav Bhavsar and Anil K Sao, ***"Effectiveness of GAN-based Synthetic Samples Generation of Minority Patterns in HEp-2 Cell Images"*** in 42^{nd} Annual International Conference of the IEEE Engineering in Medicine & Biology Society **(EMBC-2020)**, 20-24 July 2020, Montreal, Canada
9. Abhigyan Khaund, **Daksh Thapar**, and Aditya Nigam, ***"PoshakNet: Framework for matching dresses from real life photos using GAN and Siamese Network"*** in 7^{th} National Conference on Computer Vision, Pattern Recognition, Image Processing and Graphics **(NCPRIVG-2019)**, 22-24 December 2019, Hubballi, India
8. **Daksh Thapar**, Gaurav Jaswal, and Aditya Nigam, ***"FKIMNet: A Finger Dorsal Image Matching Network Comparing Component (Major, Minor and Nail) Matching with Holistic (Finger Dorsal) Matching"*** in International Joint Conference on Neural Networks **(IJCNN-2019)**, 14-19 July 2019, Budapest, Hungary
7. Krati Gupta, **Daksh Thapar**, Arnav Bhavsar and Anil K Sao, ***"Deep metric learning for identification of mitotic patterns of HEp-2 cell images"*** in IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops **(CVPR Workshop - 2019)**, 16-20 June 2019, California, USA

6. **Daksh Thapar**, Gaurav Jaswal, and Aditya Nigam, ***"Learning Domain Specific Features using Convolutional Autoencoder : A Vein Authentication Case Study using Siamese Triplet Loss Network"*** in 8^{th} International Conference on Pattern Recognition Applications and Methods **(ICPRAM)**, Prague, Czech Republic, Feb 19-21, 2019

5. **Daksh Thapar**, Gaurav Jaswal, and Aditya Nigam, ***"PVSNet: Palm Vein Authentication Siamese Network Trained using Triplet Loss and Adaptive Hard Mining by Learning Enforced Domain Specific Features"*** in IEEE International Conference on Identity, Security and Behavior Analysis **(ISBA)**, 22-24 Jan 2019, IDRBT, Hyderabad, India

4. 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 (A* conference)

3. **Daksh Thapar**, Divyansh Aggarwal, Punjal Agarwal and Aditya Nigam, ***"VGR-Net: A View Invariant Gait Recognition Network"*** in IEEE International Conference on Identity, Security and Behavior Analysis **(ISBA)**, 10-12 Jan 2018, Singapore

2. Ranjeet R. Jha, Shreyas M. Patil, **Daksh Thapar**, and Aditya Nigam, ***"UBSegNet: Unified Biometric ROI Segmentation Network"*** in at 28^{th} Asian Conference on Pattern Recognition **(ACPR)**, Nanjing, China, Nov 26-29, 2017

1. Tushar Jain, Shreyas M. Patil, **Daksh Thapar**, Mukkaram Tailor and Aditya Nigam, ***"BrainSegNet: A Segmentation Network for Human Brain Fiber Tractography Data into Anatomically Meaningful Clusters"*** in DLID at 28^{th} British Machine Vision Conference **(BMVC Workshop)**, Imperial Collage London, Sep 4-7, 2017