

# Vinod K Kurmi, Ph.D.

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Experience in Computer Vision, Deep Learning, Machine Learning, Domain Adaptation, Multimodal Learning, Fair Learning, Medical Image Processing, and Speech/Audio Processing.

## Employment History

- |                      |  |
|----------------------|--|
| March 2022- Present  | ■ <b>Assistant Professor</b> , Data Science and Engineering IISER Bhopal, India                  |
| May 2021- March 2022 | ■ <b>Post-Doc Research Fellow</b> , KU Leuven, Belgium<br>Supervisor: Prof. Tinne Tuytelaars     |
| Aug 2020-April 2021  | ■ <b>Post-Doc Research Fellow</b> , CVIT, IIIT Hyderabad, India<br>Supervisor: Prof. C V Jawahar |
| July 2019-Nov 2019   | ■ <b>Tutor</b> , Introduction to Electronics (Lab), IIT Kanpur                                   |
| July 2018-Nov 2018   | ■ <b>Tutor</b> , Introduction to Electronics (Lab), IIT Kanpur                                   |
| May 2014- June 2014  | ■ <b>Senior Student Research Associate</b> , Computer Vision Lab IIT Kanpur                      |

## Education

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|-------------|--|
| 2014 – 2020 | ■ <b>Ph.D., EE, Indian Institute of Technology Kanpur</b> , India.<br>Thesis title: <i>Understanding Transfer Learning between Domains and Tasks</i> ,<br>"Outstanding Ph.D.Thesis Award" by IIT Kanpur, 2021<br>Supervisors: Prof. Vinay P. Namboodiri and Prof. K S Venkatesh. |
| 2012 – 2014 | ■ <b>M.Tech, EE, Indian Institute of Technology Kanpur</b> , India.<br>Thesis title: <i>Human Hand Gesture Recognition from 3D Data</i> ,<br>Supervisor: Prof. K S Venkatesh.  |
| 2008 – 2012 | ■ <b>B.E., Electronics &amp; Telecommunication, SGSITS Indore</b> , India.   |

## Teaching

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|-------------|--|
| Winter 2022 | ■ <b>Transfer Learning for Computer Vision</b> , IISER Bhopal  |
| Fall 2022   | ■ <b>Deep Learning</b> , IISER Bhopal  |
| Winter 2023 | ■ <b>Deep Learning</b> , IISER Bhopal  |
| Fall 2023   | ■ <b>Transfer Learning for Computer Vision</b> , IISER Bhopal<br>■ <b>Applied Accelerated Artificial Intelligence</b> , IISER Bhopal |
| Winter 2024 | ■ <b>Deep Learning</b> , IISER Bhopal  |
| Fall 2024   | ■ <b>Advanced Deep Learning</b> , IISER Bhopal   |
| Winter 2025 | ■ <b>Deep Learning</b> , IISER Bhopal  |
| Fall 2025   | ■ <b>Advanced Deep Learning</b> , IISER Bhopal<br>■ <b>Cloud Computing</b> , IISER Bhopal  |
| Winter 2026 | ■ <b>Introduction to Programming</b> , IISER Bhopal<br>■ <b>Transfer Learning for Computer Vision</b> , IISER Bhopal                 |

## Awards and Achievements

- 2024
  - **ANRF Travel Grant**
  - **Selected for ACM-Pingla Event** by ACM India.
- 2021
  - **Outstanding Ph.D.Thesis Award 2021** by IIT Kanpur
  - **ICCV 2021 Doctoral Consortium**
- 2020
  - **DAAD AI Post-Doc Net Fellow**
  - NeurIPS 2020 Financial Assistance Award
- 2019
  - **Qualcomm Innovation Fellowship 2019** Finalists
- 2017
  - **Among top performers**, and awarded by cash prize at "Summer school of Machine Learning" at Centre for Visual Information Technology (CVIT) Hyderabad.
  - **Among top performers**, and awarded by cash prize at "Summer school of Deep Learning" at Centre for Visual Information Technology (CVIT) Hyderabad.
- 2015
  - **TCS Research Fellowship** Award for 4 years (2015-2019).
- 2014
  - Recipient of **MHRD PhD Fellowship**.
  - Qualified for **Junior Research Fellowship (JRF)** of CSIR -NET.
- 2012
  - Recipient of **MHRD Post-Graduate Fellowship**.

## Travel Grants

- Sep 2024
  - Awarded ITS-ANRF for Interspeech 2024.
- Dec 2022
  - Awarded **DAAD-AI Net Post Doc** Travel Grant to travel research and academic institute of Germany.
- Dec 2019
  - Awarded **TCS** Travel Grant for NCVPRIPG 2019.
- July 2019
  - Awarded **Microsoft** Travel Grant for IJCNN 2019.
  - Awarded **EE, IIT Kanpur** Travel Grant for IJCNN 2019.
- June 2019
  - Awarded **Google** Travel Grant for CVPR 2019.
  - Awarded **Microsoft** Travel Grant for CVPR 2019.

## Position of Responsibility

- June 2025- Present
  - Member of Centre for Skill Development and Training at IISER Bhopal, India.
- June 2025
  - Institute Representative (IR) of *IISER Aptitude Test (IAT) 2025*
- Jan 2024- Jan 2026
  - **Convener, Dept. Post Graduate Committee (DPGC)**, Data Science and Engineering IISER Bhopal, India.
- Oct 2024- Present
  - Committee Member to Review Internet, Email usage policies and Website Development IISER Bhopal, India.
  - Institute Representative (IR) of *IISER Aptitude Test (IAT) 2023* IISER Bhopal, India.
- Feb 2023- Present
  - **Member of Departmental Faculty Affairs Committee (DFAC)**, Data Science and Engineering IISER Bhopal, India.
- Dec 2023- Present
  - **Member of Departmental Under Graduate Committee (DUGC)**, Data Science and Engineering IISER Bhopal, India.
- Dec 2023- Jan 2026
  - **Member of Departmental Post Graduate Committee (DPGC)**, Data Science and Engineering IISER Bhopal, India.
- July 2022
  - Institute Representative (IR) of *IISER Aptitude Test (IAT) 2023* IISER Bhopal, India.

# Position of Responsibility (continued)

May 2022

- **Dept. Representative for Center for Science and Society (CS<sub>2</sub>) activities,**  
Data Science and Engineering IISER Bhopal, India.

## Skills

- Programming Languages      ■ Python, Matlab, Lua, C++, C and L<sup>A</sup>T<sub>E</sub>X
- Deep Learning Frameworks      ■ PyTorch, OpenCV, Torch, Theano, Keras, TensorFlow

## Publications

### Patents

- Patent-2015      ■ **Vinod K Kurmi**, Garima Jain, KS Venkatesh, "A Human-Hand Detection System, Apparatus and a Method Thereof", India PO No.1678/DEL/2015, 526161 [Certificate].

### Book Chapters

- Elsevier 2021      ■ Indu Joshi, Ayush Utkarsh, Riya Kothari, **Vinod K. Kurmi**, Antitza Dantcheva, Sumantra Dutta Roy, Prem Kalra, , "On Estimating Uncertainty of Fingerprint Enhancement Models", DIGITAL IMAGE ENHANCEMENT AND RECONSTRUCTION, Elsevier 2021 [PDF] .

## Journals

- Neuroscience 2025      ■ Srutanik Bhaduri, Rasel Mondal, Prateek Sarangi, **Vinod Kurmi**, Swati Goyal, Lovely Kaushal, Mahek Sodani, Tammay Basu "Attention-Gated CNN and Discrete Wavelet Transform based Ensemble Framework for Brain Hemorrhage Classification ", *Neuroscience Informatics* 2025
- IMAVIS- 2023      ■ H. Tiwari, **Vinod K. Kurmi**, Venkatesh K Subramanian, Yong-Sheng Chen, "Distilling Knowledge for Occlusion Robust Monocular 3D Face Reconstruction", *Image and Vision Computing*, 2023 [PDF] [IF: 3.103]
- Neurocomp- 2021      ■ **Vinod K. Kurmi**, Venkatesh K Subramanian, Vinay P. Namboodiri, "Exploring Dropout Discriminator for Domain Adaptation", *Neurocomputing*, 2021 [PDF][IF: 4.438]
- IMAVIS- 2021      ■ Badri N. Patro, **Vinod K. Kurmi**, Sandeep Kumar, Vinay P. Namboodiri, "MUMC: Minimizing Uncertainty of Mixture of Cues", *Image and Vision Computing*, 2021 [IF: 3.103]
- IMAVIS-2021      ■ **Vinod K. Kurmi**, Venkatesh K Subramanian, Vinay P. Namboodiri, "Informative Discriminator for Domain Adaptation", *Image and Vision Computing*, 2021 [PDF] [IF: 3.103]
- Neurocomp- 2020      ■ Badri N. Patro, Dev Chauhan, **Vinod K. Kurmi**, Vinay P. Namboodiri, "Revisiting Paraphrase Question Generator using Pairwise Discriminator", *Neurocomputing*, 2020. [PDF] [Code] [IF: 4.438].

## Publications (continued)

### Conferences

- ICLR-2026 ■ Rajeev Ranjan Dwivedi, ,Mohammedkaif Mohammedrafiq Kalagond, Niramay M.Patel and **Vinod K Kurmi** “Regulating Internal Evidence Flows for Robust Learning Under Spurious Correlations” *International Conference on Learning Representations (ICLR)*, 2026.  
[Core Rank A\*].
- WACV-2026 ■ Abhinav Attri, Rajeev Ranjan Dwivedi, Samiran Das, and **Vinod K Kurmi** “Histogram Assisted Quality Aware Generative Model for Resolution Invariant NIR Image Colorization” *IEEE Winter Conference of Applications on Computer Vision (WACV)*, 2026.  
[Core Rank A].
- BMVC-2025 ■ Rini Smita Thakur, Rajeev Ranjan Dwivedi, **Vinod K Kurmi**, “Grad-CL: Source Free Domain Adaptation with Gradient Guided Feature Disalignment”, *36th British Machine Vision Conference (BMVC 2025), Sheffield, UK*  
[Core Rank A].
- BMVC- 2025 ■ Anshul Kaushal, Kunal Jangid, **Vinod K Kurmi**, “CLFSeg: A Fuzzy-Logic based Solution for Boundary Clarity and Uncertainty Reduction in Medical Image Segmentation”, *36th British Machine Vision Conference (BMVC 2025), Sheffield, UK*  
[Core Rank A].
- ECAI-2025 ■ Rajeev Dwivedi, Ankur Kumar, **Vinod K Kurmi**, “Multi-Attribute Bias Mitigation via Representation Learning”, *The 28th European Conference on Artificial Intelligence (ECAI-2025), Bologna, Italy*  
[Core Rank A].
- IROS-2025 ■ Mayank Thakur, Radhe Shyam Sharma, **Vinod K Kurmi**, Raj Samant, Badri N Patro “Spectral-Temporal Attention for Robust Change Detection”, *2025 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Hangzhou, China*  
[H<sub>5</sub>-Index: 86][Core Rank A].
- Interspeech-2025 ■ Kirandevraj R., **Vinod K. Kurmi**, Vinay P Namboodiri, C V Jawahar “Multilingual Query-by-Example KWS using Transliteration”, *Conference of the International Speech Communication Association (Interspeech), Rotterdam, The Netherlands, 2025*  
[H<sub>5</sub>-Index: 107][Core Rank A].
- WACV-2025 ■ Parinita Nema, **Vinod K. Kurmi**, “Strategic Base Representation Learning via Feature Augmentations for Few-Shot Class Incremental Learning”, *IEEE Winter Conference of Applications on Computer Vision (WACV), Tucson, Arizona, 2025.*  
[H<sub>5</sub>-Index: 95][Core Rank A].
- WACV- 2025 ■ Shivangi Rai, Rini S Thakur, Kunal Jangid, **Vinod K. Kurmi**, “Evidential Deep Learning for Pseudolabel Refinement in Source Free Domain Adaptation”, *IEEE Winter Conference of Applications on Computer Vision (WACV), Tucson, Arizona, 2025.*  
[H<sub>5</sub>-Index: 95][Core Rank A].

## Publications (continued)

- WACV-2025 ■ Rini S Thakur, **Vinod K. Kurmi**, “Uncertainty and Energy based Loss Guided SS Semantic Segmentation”, *IEEE Winter Conference of Applications on Computer Vision (WACV), Tucson, Arizona, 2025*.  
[H<sub>5</sub>-Index: 95][Core Rank A].
- BMVC-2024 ■ Rajeev Ranjan Dwivedi, Priyadarshini K, **Vinod K. Kurmi**, “CosFairNet:A Parameter-Space based Approach for Bias Free Learning”, *35th British Machine Vision Conference(BMVC 2024), Glasgow, UK*.  
[H<sub>5</sub>-Index: 65][Core Rank A].
- CIKM-2024 ■ Udbhav Mallanna Dalavai, Rini Smita Thakur, Rajeev Ranjan Dwivedi **Vinod K. Kurmi**, “Quantifying Uncertainty in Neural Networks through Residuals”, *CThe 33rd ACM International Conference on Information and Knowledge Management (CIKM 2024).Boise, Idaho, USA.*  
[H<sub>5</sub>-Index: 91][Core Rank A].
- Interspeech-2024 ■ Riyansha Singh, Parinita Nema, **Vinod K. Kurmi**, “Towards Robust Few-shot Class Incremental Learning in Audio Classification using Contrastive Representation”, *Conference of the International Speech Communication Association (Interspeech),Kos Island, Greece, 2024*.  
[H<sub>5</sub>-Index: 107][Core Rank A].
- Interspeech-2022 ■ Kirandevraj R, **Vinod K. Kurmi**, Vinay P Namboodiri, C V Jawahar “Generalized Keyword Spotting using ASR embeddings”, *Conference of the International Speech Communication Association (Interspeech), Incheon Korea, 2022* [PDF].  
[H<sub>5</sub>-Index: 107][Core Rank A].
- AAAI-2022 ■ **Vinod K. Kurmi\***, Rishabh Sharma\*, Yash Vardhan Sharma\*, Vinay P Namboodiri “Gradient Based Activations for Accurate Bias-Free Learning”, *Proceedings of the AAAI Conference on Artificial Intelligence, (AAAI), Vancouver BC, Canada, 2022 (\* Equal contributions)*[PDF].  
[H<sub>5</sub>-Index: 212][Core Rank A\*].
- WACV-2022 ■ H. Tiwari, **Vinod K. Kurmi**, Venkatesh K Subramanian, Yong-Sheng Chen, “Occlusion Resistant Network for 3D Face Reconstruction”, *IEEE Winter Conference of Applications on Computer Vision (WACV), Waikoloa, 2022*[PDF].  
[H<sub>5</sub>-Index: 95][Core Rank A].
- ICASSP-2021 ■ **Vinod K. Kurmi**, Vipul Bajaj, Badri N. Patro, Venkatesh K Subramanian, Vinay P. Namboodiri, Preethi Jyothi, “Collaborative Learning to Generate Audio-Video Jointly”, *IEEE International Conference on Acoustics, Speech, and Signal Processing. (ICASSP), Virtual, 2021*.  
[PDF] [Code][H<sub>5</sub>-Index: 123].
- WACV-2021 ■ **Vinod K. Kurmi**, Venkatesh K Subramanian, Vinay P. Namboodiri, “Domain Impression: A Source Data Free Domain Adaptation Method”, *IEEE Winter Conference of Applications on Computer Vision (WACV), Virtual, 2021*.  
[PDF] [Code][H<sub>5</sub>-Index: 95][Core Rank A].
- WACV- 2021 ■ **Vinod K. Kurmi**, Badri N. Patro, Venkatesh K Subramanian, Vinay P. Namboodiri, “Do not Forget to Attend to Uncertainty while Mitigating Catastrophic Forgetting”, *IEEE Winter Conference of Applications on Computer Vision (WACV), Virtual, 2021*.  
[PDF] [Code][H<sub>5</sub>-Index: 95][Core Rank A].

## Publications (continued)

- IJCNN-2021 ■ Indu Joshi, Ayush Utkarsh, Riya Kothari, **Vinod K. Kurmi**, Antitza Dantcheva, Sumantra Dutta Roy, Prem Kalra, "Learning Noise-aware Preprocessing Of Fingerprints", *International Joint Conference on Neural Networks (IJCNN), Virtual, 2021* [**H<sub>5</sub>-Index: 60**][Core Rank B].
- IJCNN- 2021 ■ Indu Joshi, Ayush Utkarsh, Riya Kothari, **Vinod K. Kurmi**, Antitza Dantcheva, Sumantra Dutta Roy, Prem Kalra, "On Learning Sensor-invariant Features For Fingerprint ROI Segmentation", *International Joint Conference on Neural Networks (IJCNN), Virtual, 2021* [**H<sub>5</sub>-Index: 60**][Core Rank B].
- WACV-2020 ■ Badri N. Patro, **Vinod K. Kurmi**, Sandeep K., Vinay P. Namboodiri, "Deep Bayesian Network for Visual Question Generation", *IEEE Winter Conference of Applications on Computer Vision (WACV), Snowmass Village, USA, 2020.* [PDF] [Code] [**H<sub>5</sub>-Index: 95**][Core Rank A].
- BMVC-2019 ■ **Vinod K. Kurmi**, Vipul Bajaj, Venkatesh K Subramanian, Vinay P. Namboodiri, "Curriculum based Dropout Discriminator for Domain Adaptation", *British Machine Vision Conference (BMVC) , Cardiff, UK, 2019.* [PDF] [Code] [**H<sub>5</sub>-Index: 65**][Core Rank A].
- CVPR-2019 ■ **Vinod K. Kurmi\***, Sharu Kumar\*, Vinay P. Namboodiri, "Attending to Discriminative Certainty for Domain Adaptation", *IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Long Beach, California, USA, 2019 (\* Equal contributions).* [PDF] [Code] [**H<sub>5</sub>-Index: 422**][Core Rank A\*].
- IJCNN-2019 ■ **Vinod K. Kurmi**, Vinay P. Namboodiri, "Looking back at Labels: A Class based Domain Adaptation Technique ", *International Joint Conference on Neural Networks (IJCNN), Budapest, Hungary, 2019 (Oral Presentation).* [PDF] [Code] [**H<sub>5</sub>-Index: 60**][Core Rank A].
- EMNLP-2018 ■ Badri N. Patro, Sandeep K., **Vinod K. Kurmi**, Vinay P. Namboodiri, "Multimodal Differential Network for Visual Question Generation", *Conference on Empirical Methods in Natural Language Processing (EMNLP), Brussels, Belgium, 2018.* [PDF] [Code] [**H<sub>5</sub>-Index: 176**][Core Rank A\*].
- COLING-2018 ■ Badri N. Patro\*, **Vinod K. Kurmi\***, Sandeep Kumar\*, Vinay P. Namboodiri, "Learning Semantic Sentence Embeddings using Pair-wise Discriminator", *Proceedings of 27th International Conference on Computational Linguistics (COLING), Santa Fe, New Mexico, USA, 2018 (\* Equal contributions).* [PDF] [Code] [**H<sub>5</sub>-Index: 65**][Core Rank B].
- WSCG-2015 ■ **Vinod K Kurmi**, G. Jain, KS Venkatesh, "Robust Human Gesture Recognition form 3D Data" *WSCG 2015, 23rd International Conference in Central Europe on Computer Graphics, Visualization and Computer Vision (WSCG), Czech Republic, 2015.* [PDF].

## Workshops

- WACV-XAI-2021 ■ Indu Joshi, Riya Kothari, Ayush Utkarsh, **Vinod K. Kurmi**, Antitza Dantcheva, Sumantra Dutta Roy, Prem Kalra, "Explainable Fingerprint ROI Segmentation Using Monte Carlo Dropout", *Workshop on Explainable and Interpretable Artificial Intelligence for Biometrics at WACV 2021* [**H<sub>5</sub>-Index: 54**]
- ICCV-CLVL-2019 ■ Badri N. Patro\*, **Vinod K. Kurmi\***, Sandeep Kumar\*, Vinay P. Namboodiri, "Learning Semantic Sentence Embeddings using Pair-wise Discriminator", *ICCV Workshop (CLVL), Seoul, South Korea, 2019.(Spotlight) (\* Equal contributions)* [**H<sub>5</sub>-Index: 51**].

## Publications (continued)

- ICCV- CLVL-2019
- Badri N. Patro, Sandeep Kumar, **Vinod K. Kurmi**, Vinay P. Namboodiri, "Multi-modal Differential Network for Visual Question Generation", **ICCV Workshop (CLVL)**, Seoul, South Korea, 2019.(**Spotlight**)  
[**H<sub>5</sub>-Index: 51**].

## Preprints

- arXiv preprint 2021
- Shanu Kumar, **Vinod K Kurmi**, Praphul Singh, Vinay P Namboodiri, "Mitigating Uncertainty of Classifier for Unsupervised Domain Adaptation", *arXiv:2107.00727* [PDF].
- arXiv Preprint 2021
- Blessen George, **Vinod K Kurmi**, Vinay P Namboodiri, "Prb-GAN: A Probabilistic Framework for GAN Modelling", *arXiv:2107.3834501* [PDF].

## PhD Research Work

- Jan 2014-June-2020
- **Understanding Transfer Learning between Domains and Tasks,**  
*Prof. K S Venkatesh and Prof. Vinay P. Namboodiri*  
Analyzed and tackled the different problems of faced in domain adaptation. We proposed variety of techniques such as improved discriminator and considering distribution based adaptation. By obtaining uncertainty and through these localized adaptation has been proposed. In next work, we proposed a attention and uncertainty based models for task incremental learning. We tackled the domain adaptation problems without avail the source data.

## Masters Research Work

- July 2013-June-2014
- **Human Hand Gesture Recognition from 3D Data,**  
*Prof. K S Venkatesh*  
The objective was to develop efficient algorithms to detect hand gestures in varying light conditions, irrespective of background clutter. The hardware used was Kinect sensor from Microsoft. Human hand constellation identified from the 3D data to identify the hand. The proposed algorithm and system works in varying light conditions, background clutter and any human pose.

## Research Projects

### Funded Project

- Sep 2024-Sep 2025
- Enhancing Head and Neck Cancer Treatment: Deep Learning for Efficient Tumor Contour Detection from Limited CT Scan Data. (**iHub IIIT Hyderabad**)  
**Role: PI**
- Oct 2024-Sep 2027
- Weakly supervised source free domain adaptation of Fundus images using Scribbles (**WISE-KIRAN DST**) **Role: Supervisor**
- April 2022-March 2024
- Fair Deep Learning Model for Unbiased Prediction from Biased Data (**IISERB -Seed Grant**) **Role: PI**

## **Research Projects (continued)**

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### **Academic Projects**

- |      |  |
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| 2015 | ■ Gaussian Process based Hallucination of Features for Object Classification (Machine Learning in Computer Vision)                 |
|      | ■ Study of Clustering and Classification Technique for Analytical Datasets (Convex Optimization)                                   |
|      | ■ Indoor Positioning Using UWB-IR Signals in the Presence of Dense Multipath with Path Overlapping (Statistical Signal Processing) |
| 2014 | ■ Cooperative MIMO Multicell Networks (Wireless Communications)  |
| 2012 | ■ GPS based Vehicle Tracking System (B.E. Project)   |

### **References**

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#### **Prof. Vinay P. Namboodiri**

Associate Professor  
University of Bath, UK  
✉ [vpn22@bath.ac.uk](mailto:vpn22@bath.ac.uk)  
🌐 <https://vinaypn.github.io/>

#### **Prof. K S Venkatesh**

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#### **Prof. C V Jawahar**

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IIIT Hyderabad, India  
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