Vinod K Kurmi, Ph.D.

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https://scholar.google.co.in/citations?user=Exo2VNAAAAAJ&hl=en
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Experience in Computer Vision, Deep Learning, Machine Learning, Domain Adaptation, Multimodal Learning, Fair Learning and NLP. Currently working on Multimodal representation learning projects.

Employment History

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

Education

2014 – 2020 **Ph.D., EE, Indian Institute of Technology Kanpur**, India.
Thesis title: *Understanding Transfer Learning between Domains and Tasks*,
"Outstanding Ph.D.Thesis Award" by IIT Kanpur, 2021
Supervisors: Prof. Vinay P. Namboodiri and Prof. K S Venkatesh.

2012 – 2014 **M.Tech, EE, Indian Institute of Technology Kanpur**, India.
Thesis title: *Human Hand Gesture Recognition from 3D Data*,
Supervisor: Prof. K S Venkatesh.

2008 – 2012 **B.E., Electronics & Telecommunication, SGSITS Indore**, India.

Skills

Programming Languages	Python, Matlab, Lua, C++, C and LaTeX
Deep Learning Framworks	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.

Journals

Neurocomp- 2021 **Vinod K. Kurmi**, Venkatesh K Subramanian, Vinay P. Namboodiri, "Exploring Dropout Discriminator for Domain Adaptation", ***Neurocomputing***, *2021* [PDF]**[IF: 4.438]**

Publications (continued)

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]**.

Conferences

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.*
[**H5-Index: 89**][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*).
[**H5-Index: 157**][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.*
[**H5-Index: 62**][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][**H5-Index: 96**].

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][**H5-Index: 62**][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][**H5-Index: 62**][Core Rank **A**].

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*
[**H5-Index: 57**][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*
[**H5-Index: 57**][Core Rank **B**].

Publications (continued)

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][**H5-Index: 62**][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] [**H5-Index: 66**].

CVPR-2019 — **Vinod K. Kurmi***, Shanu 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][**H5-Index: 356**][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][**H5-Index: 57**][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][**H5-Index: 132**][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][**H5-Index: 64**][Core Rank **A**].

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.*
[**H5-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*)
[**H5-Index: 51**].

ICCV- CLVL-2019 — Badri N. Patro, Sandeep Kumar, **Vinod K. Kurmi**, Vinay P. Namboodiri, "Multimodal Differential Network for Visual Question Generation"„ **ICCV Workshop** (CLVL), Seoul, South Korea, 2019.(**Spotlight**)
[**H5-Index: 51**].

Publications (continued)

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*.

Travel Grants

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.

Awards and Achievements

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.

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

Industrial Projects

July 2013-June 2014 — Gesture Recognition System of Smart TV (**Samsung-IITK collaboration Project**)

Academic Projects

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)

Teaching Assistantship

July 2017-Nov 2017 — **Teaching Assistant**, Signal, Systems and Networks

Jan 2017- May 2017 — **Teaching Assistant**, Introduction to Electronics

July 2016- Nov 2016 — **Teaching Assistant**, Introduction to Electronics

Jan 2016- May 2016 — **Teaching Assistant**, Department Post-Graduation Committee

July 2015- Nov 2016 — **Teaching Assistant**, Computer Vision Lab

Jan 2015- May 2015 — **Teaching Assistant**, Department Post-Graduation Committee

July 2012- May 2014 — **Teaching Assistant**, Department Post-Graduation Committee

Miscellaneous Experience

Professional Services

2019-2021 — Served as a reviewer for IEEE Transactions on Neural Networks and Learning Systems (**TNNS**), Pattern Recognition (**PR**), and IEEE Transactions on Image Processing (**TIP**) .

2018-2022 — Served as a reviewer for conferences **AAAI, ECCV, ICCV, ICLR, CVPR, NeurIPS, BMVC, ICASSP, ECML-PKDD, WACV, ICVGIP, NCVPRIPG, ICME**.

2019 — Member of International Neural Network Society (**INNS**)

2019-2021 — Member of Computer Vision Foundation (**CVF**)

Miscellaneous Experience (continued)

Talks/Seminars

- 2022 Invited talk on 'Disaster Management using Computer Vision' in Knowledge Workshop at Digital University Kerala (India).
- Invited talk on 'Domain Adaptation in Industry' in Viman Technology India.
- 2021 Keynote speaker in International Conference ICRASE 2020 at New Delhi, India.
- 2019 Delivered oral presentation on 'Attending to Discriminative Certainty for Domain Adaptation' in **NCVPRIPG** at Hubli (India).
- Delivered oral presentation on 'Looking back at Labels: A Class based Domain Adaptation Technique' in **IJCNN** at Budapest (Hungary).
- Presented poster on 'Attending to Discriminative Certainty for Domain Adaptation' in **CVPR** at Long Beach, CA (USA).
- Delivered talks on '**Bayesian Models for Domain Adaptation**' in 'QINF' at Qualcomm, Bangalore (India).
- Delivered talks on '**Basics of Python and PyTorch**' in "ITEC course on AI" at IIT Kanpur (India).
- 2018 Presented poster on 'Learning Semantic Sentence Embeddings using Pair-wise Discriminator' in **Amazon Research Day** at Bangalore (India).
- Delivered talks on 'Computer Vision and Image Processing' in "TEQIP training session" at IIT Kanpur (India).
- Delivered talks on '2D and 3D Vision for Robotics' in "TEQIP short term course on Introduction to Robotics" at IIT Kanpur (India).
- 2017 Presented poster on 'Domain Adaptation on Computer Vision' at Electrical Engineering **IIT Kanpur Research Day**.
- Delivered State-of-the-Art seminar on 'Domain Adaptation and Modality Hallucination' at Electrical Engineering **IIT Kanpur**.

Workshops and Conferences Attended

- 2020 Participated in **DAAD AI Post-Doc Net Tour**, Virtual.
- Attended **NeurIPS 2020**, Virtual.
- 2019 Participated in **NCVPRIPG** 2019 at Hubli, India.
- Participated in **IJCNN** 2019 at Budapest, Hungary.
- Participated in **CVPR** 2019 at Long Beach, USA.
- Participated in **Amazon Research Day** 2019 at Bangalore sponsored by Amazon, India.
- 2018 Participated in **Amazon Research Day** 2018 at Bangalore sponsored by Amazon, India.
- 2017 Attended Summer School on **Advance Computer Vision using Deep learning** at IIIT Hyderabad, India.
- Attended summer School on Machine Learning at IIIT Hyderabad
- 2016 Attended Mysore Park Workshop on **Vision, Language and AI** at VLAI 2016, Mysore, India.
- Attended Summer School on Deep Learning at IIIT Hyderabad, India.

References

Available on Request