Vinod K. Kurmi

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Research Interests: Computer Vision, Machine Learning and AI, Domain Adaptation, Multimodal Learning.

Education

2015–Present **Doctor of Philosophy in Electrical Engineering**, *Indian Institute of Technology, Kanpur, India*, Specialized in Communication & Signal processing.

2012–2014 **Masters of Technology in Electrical Engineering**, *Indian Institute of Technology, Kanpur, India*, Specialized in Communication & Signal processing.

2008–2012 **Bachelor of Engineering in Electronics & Tele Communication**, *SGSITS*, Indore, MP.

Patents

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

Conference Publications

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.*

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 2018), Santa Fe, New Mexico, USA, 2018.*
   * equal contributions

2015 **Vinod K Kurmi**, G. Jain, KS Venkatesh,"Robust Human Gesture Recognition form 3D" *WSCG 2015, 23rd International Conference in Central Europe on Computer Graphics, Visualization and Computer Vision(WSCG), Czech Republic, 2015.*

Under Review Papers

2019 Dropout Discriminator: A Sampling based Ensemble approch for Domain Adaptation

2019 Attending to Discriminative Certainty for Domain Adaptation

2019 Deep Bayesian Network for Visual Question Generation

2019 Informative Discriminator for Domain Adaptation

Work Experiences

2014   **Computer Vision Lab IIT Kanpur**, *Senior Student Research Associate*, Kanpur, India.
- Developed a middleware for human hand detection from the Kinect Depth sensor data.
- It overcome the issues of Microsoft's SDK, which requires the full human pose to detect the hand position.

Teaching Experiences

2017   **Teaching Assistant**, *Signal Systems and Networks*, EE200, Winter, IIT Kanpur .

2016   **Teaching Assistant**, *Introduction to Electronics*, ESC201, Autumn, IIT Kanpur.

2016   **Teaching Assistant**, *Introduction to Electronics*, ESC201, Winter, IIT Kanpur.

2015   **Teaching Assistant**, *Computer Vision Lab*, Autumn,IIT Kanpur.

2015   **Teaching Assistant**, *Department Post-Graduation Committee*, Winter, IIT Kanpur.

2014   **Teaching Assistant**, *Department Post-Graduation Committee*, Winter, IIT Kanpur.

2013   **Teaching Assistant**, *Introduction to Electronics*, ESC201, Autumn, IIT Kanpur.

2012-13   **Teaching Assistant**, *Department Post-Graduation Committee*, IIT Kanpur.

PhD Research Work

Title   **Domain Adaptation and Multimodal Alignment**.
Supervisors -:Prof. Vinay P. Namboodiri(CSE) and Prof. K S Venkatesh(EE).

Description   **The Details of my work are as follows**, .
- Analyzing source data information for adapting the deep learning models in target domain.
- Analysis pf the model, data and distributional uncertainly for domain adaptation.
- Working on adversarial learning for modality alignment and cross model generation problems.

Github Codes

2018   **Multimodal Differential Network for Visual Question Generation**, :.
- https://github.com/vinodkkurmi/Visual_Question_Generation.

2018   **Learning Semantic Sentence Embeddings using Pair-wise Discriminator**, : .
- https://github.com/vinodkkurmi/Visual_Question_Generation.

Industrial Collaboration Projects

2014   Gesture Recognition System of Smart TV (Samsung-IITK collaboration Project)

Technical Course Projects

2015   Gaussian Process based Hallucination of features for object classification (Machine Learning in Computer Vision)

2015   Study of Clustering and Classification Technique for Analytical Data Sets (Convex Optimization)

2015   Indoor Positioning Using UWB-IR Signals in the Presence of Dense Multipath with Path Overlapping (Statistical Signal Processing)

2013 Cooperative MIMO Multicell Networks (Wireless Communications)

2012 GPS based Vehicle Tracking System (B.E Project)

Industrial Workshops

2018 Participated in Amazon Research Day 2018 at Bangalore sponsored by Amazon

2017 Summer school on Advance Computer Vision using Deep learning(vision and language, videos, Domain Adaption, and advances in 3D) (IIITH)

2017 Summer School on Machine Learning using Deep Learning(optimization for DL, GAN, VAE, DL for RL and game theory) (IIITH)

2016 Mysore Park Workshop on Vision, Language and AI(Video Caption, guided LSTM, GAN, Adversarial auto-encoders, Deep contextual models) (VLAI 2016, Mysore)

2016 Summer School on Deep Learning (CNN, RNN, Auto-encoder, optimization for DL, model compression) (IIITH)

Technical skills

Deep learning Torch, Pytorch, Caffe

Tools: OpenCV, LATEX

Language : Lua, Python, C, C++, MATLAB

Awards

2017 Achieved Top 20 Rank and awarded by cash prize at Summer school of Machine Learning at Centre for Visual Information Technology (CVIT) Hyderabad

2017 Achieved Top 20 Rank and awarded by cash prize at Summer school of Computer Vision at Centre for Visual Information Technology (CVIT) Hyderabad

2016 TCS Research Fellowship Award for 4 years(2015-2019)

2014 Junior Research Fellowship (JRF) of CSIR -NET

Talks/Posters Presented

2018 Presented poster on Learning Semantic Sentence Embeddings using Pair-wise Discriminator at Amazon Research Day at Banglore(India)

2017 Presented poster on Domain Adaptation on Computer Vision at Electrical Engineering IIT Kanpur Research Day

2016 Delivered State-of-the-Art seminar on Domain Adaptaion and Modality Hallucination at Electrical Engineering IIT Kanpur

Professional Services

2018 Served as a reviewer in conference ICVGIP-2018