Ms. Nitika Nigam

Ph.D. Student, Computer Science & Engineering,
Indian Institute of Technology (BHU) Varanasi, India

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RESEARCH INTERESTS *Computer Vision, Deep Learning, Image and Video Processing.*

EDUCATION

Doctor of Philosophy *July 2018 - Present*
Department of Computer Science & Engineering, *CGPA 9.6*
Indian Institute Of Technology (BHU), Varanasi
Thesis Supervisor: Dr. Tanima Dutta

Master of Technology *July 2016 - June 2018*
Department of Computer Science & Engineering, *CGPA 8.88*
Madan Mohan Malaviya University Of Technology, Gorakhpur
Thesis Supervisor: Prof. U. C. Jaiswal

Bachelor of Technology *July 2009 - June 2013*
Department of Computer Science and Engineering, *Percent 73.42%*
Uttar Pradesh Technical University, Lucknow

PUBLICATION

JOURNAL PUBLICATION:

1. **N. Nigam**, T. Dutta, and H. P. Gupta, "FactorNet: Holistic Actor, Object and Scene Factorization for Action Recognition in Videos," *IEEE Transactions on Circuits and Systems for Video Technology*, pp. 976-991, 2021 (doi: 10.1109/TCSVT.2021.3070688, IF: 4.685).
   - Address the issue of factorization of human actions into activity performed by actor, co-occurring objects, and underlying context to mitigate the influence of representation biases when they are irrelevant to the action in consideration.
   - Design an attention mechanism in a proposed deep neural network that separates an actor from associated object and scene.
   - The code is implemented on ParamShivay which is based on a heterogeneous and hybrid configuration of Intel Xeon Skylake processor and NVIDIA Tesla V100.
2. **N. Nigam**, T. Dutta, and D. Verma, "Fall-perceived Action Recognition of Persons with Neurological Disorders using Semantic Supervision," *IEEE Transactions on Cognitive and Developmental Systems*, pp. 1-10, 2022 (Early access, doi: 10.1109/TCDS.2022.3157813, IF: 3.379).
   - Address the issue of uncertain falls of person suffering from the early stage of the neurological disorder.
   - Design a deep neural network that incorporates semantic supervision using the per-class weight of uncertain action through class-wise weighted focal loss.
   - The code is implemented on Google CoLab which is based on hybrid configuration of 1x Tesla K80 and have 2496 CUDA cores with 12GB GDDR5 VRAM. Code
3. **N. Nigam** and T. Dutta, "Emotion and Gesture Guided Action Recognition in Videos Using Supervised Deep Networks.", *IEEE Transactions on Computational Social Systems*, pp. 1-10, 2022. (Early access, doi: 10.1109/TCSS.2022.3187198 IF: 4.747).
   - Address the issue of ambiguous action classes that occur due to emotion and gesture.
   - Design an attention-aware deep neural network that extracts discriminative features of facial expressions and gestures in the spatial and temporal dimensions.
   - The code is implemented on ParamShivay which is based on a heterogeneous and hybrid configuration of Intel Xeon Skylake processor and NVIDIA Tesla V100.
4. R.Bagi, T.Dutta **N. Nigam**, D. Verma, and, H. P. Gupta, "Met-MLTS: Leveraging Smartphones for End-to-end Spotting of Multilingual Oriented Scene Texts and Traffic Signs in Adverse Meteorological Conditions," *IEEE Transactions on Intelligent Transportation System*, vol. 23, no. 8, pp. 12801-12810, 2021. (doi: 10.1109/TITS.2021.3117793 IF: 9.551)

- Address the issue of text edges that get fainted due to adverse weather conditions, like fog, rain, smog, or poor contrast.
- Design an end-to-end trainable deep neural network that can address the issue of spotting multi-oriented text instances in scene images captured in adverse meteorological conditions.
- The code is implemented on ParamShivay which is based on a heterogeneous and hybrid configuration of Intel Xeon Skylake processor and NVIDIA Tesla V100.

5. A.Soni, T.Dutta **N. Nigam**, D. Verma, and, H. P. Gupta, "Supervised Attention Network for Arbitrary-shaped Text Detection in Edge-fainted Noisy Scene Images," *IEEE Transactions on Computational Social Systems*, 2022. (doi: 10.1109/TCSS.2022.3153557 IF: 4.747)
   - Address the issue of text detection with different arbitrary shape in noisy scene image.
   - Design a supervised attention network that learns multi-scale supervised edge semantic, pixel-wise spatial structure information, and inter-channel dependencies for precisely localizing the text masks in scene images with poor contrast and illumination.
   - The code is implemented on Google CoLab which is based on hybrid configuration of 1x Tesla K80 and have 2496 CUDA cores with 12GB GDDR5 VRAM.

CONFERENCE & POSTER PUBLICATION:

1. **N. Nigam**, T. Dutta, and H. P. Gupta, "Impact of Noisy Labels in Learning Techniques: A Survey" in *Proceedings of Springer Conference on Advances in Data and Information Sciences*, pp. 403-411, 2020.
2. **N. Nigam**, and U.C. Jaiswal, "Word Alignment of English-Hindi Parallel Corpus: Relative Study," *Proceedings of International Journal on Advance Research in Science and Engineering*, pp. 729-735, 2018.
3. **N. Nigam**, and D. Yadav, "Lexicon-based approach to sentiment analysis of tweets using R language", *Proceedings of International Conference on Advances in Computing and Data Sciences*, pp. 154-164, 2018.
4. **N. Nigam**, and T.Dutta, "Poster Abstract: A Fast, Multi-Camera, and Intelligent System for Exact Stampede Detection in Large Crowds", *Proceedings of 20th ACM Conference on Embedded Networked Sensor Systems (SenSys 2022)*, pp. 1-2, 2022.
5. **N. Nigam**, and T.Dutta, "Poster Abstract: Crowd Crush Detection in Large Mass Gatherings via Federated Learning Across Multicamera Environment", *Proceedings 9th ACM International Conference on Systems for Energy-Efficient Built Environments (BuildSys 2022)*, pp. 1-2, 2022.

OPEN DATASET

1. **N. Nigam**, D. Verma, T. Dutta (December 10, 2021): FallAction_dataset.zip. figshare. Dataset. *https://doi.org/10.6084/m9.figshare.17157845.v1*

TECHNOLOGY SKILLS

Programming Languages: C, Python, R, LaTeX, Matlab, Shell scripting
Platform: Linux/Unix, Windows
Software: Xfig, GNU plot
Hardware: ParamShivay (NVIDIA Tesla V100)

EXPERIENCE

Teaching Assistant IIT (BHU) Varanasi, India.

- Information Technology Workshop (Python Programming and Unix Shell Programming).
- Computer Programming.
- Distributed Computing.
- C Programming Lab.

SCHOLARSHIP/ AWARD

- University Grants Commission Examination for Lectureship (NET), 2017,2018.
- Graduate Aptitude Test in Engineering (GATE), 2016.

REFERENCES

On request.

PERSONAL

- Date of Birth: 08-02-1992
- Nationality: Indian
- Marital Status: Single
- Permanent Address: Eldeco Shaurya, Lucknow, India

DECLARATION

I hereby declare that the above mentioned information is correct up to my knowledge and I bear complete responsibility for the correctness of above mentioned particulars.

Regards
Ms. Nitika Nigam