ALOK SINGH

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alokssingh (Alok singh) · GitHub

Research Interests

Natural Language Generation, Video Captioning, Image Captioning, Image Processing, Machine

Learning, and Video Shot Boundary Detection.

Educational Qualification

National Institute of Technology, Silchar   **2019 - 2022**
PhD, Department of CSE   **Advisor:** Dr Thoudam Doren Singh and
Prof. Sivaji Bandyopadhyay

National Institute of Technology, Silchar   **2017-2019**
M.Tech, Department of CSE (8.88 cgpa)   **Advisor:** Dr Dalton Meitei Thounaojam

Uttarakhand Technical University, India   **2013-2017**
B.Tech, College of Engineering Roorkee (73.35%)

Work Experience

Research Associate in Machine Learning and Data Science   **University of Oxford**
(Sustainable finance group, SSEE)   **Nov 2022-current**

Research Activities

Centre for Natural Language Processing, NIT Silchar, India   **July, 2019-current**
Supervisors: Dr Thoudam Doren Singh and Prof.Sivaji Bandyopadhyay

Research goal: Visual Description Generation: bridging a gap between vision and natural language.
The research aims to generate a short natural language description of the action and events occurring in an Image or Video.

Computer Vision Lab, NIT Silchar, India   **July 2017-2019**
Supervisor: Dr Dalton Meitei Thounaojam
Research goal: Temporal Shot Boundary Detection in the presence of illumination and motion effect in a video.
The research aimed to detect abrupt boundaries in a video under illumination and motion effect effectively and efficiently.

Academic Activities

Workshop Reviewing: ALVR2020 (ACL2020), ALVR2021 (NAACL-2021), MMTLRL2021 (RANLP-2021)

Journals: Multimedia Tools and Applications, Applied Intelligence, Applied Artificial Intelligence, Imaging Science Journal

Conference: ICON-2021

Talks/Tutorials:
- Presented a tutorial on *"Visual Description Generation: Fusion of Vision and Natural Language"* in Recent Advance in Machine Translation (RAMT-2021) a workshop organised by NIT Silchar. [[Online Presentation!]]

Technical Skills:

Programming Language: Python, MATLAB, C.
Framework & Tools: Keras, Pytorch, Tensorflow.
Data Analysis: ML, DL Pytorch, Keras, scikit‑learn, NLTK, OpenCv

Publications

Journal Papers

1. Meetei, L. S., Singh, A., Singh, T. D., & Bandyopadhyay, S. (2023). Does cues in a video help in handling rare words in a machine translation system under a low-resource setting? *Natural Language Processing Journal*, 100016.

2. Singh, Alok, Thoudam Doren Singh, and Sivaji Bandyopadhyay. "V2t: video to text framework using a novel automatic shot boundary detection algorithm." *Multimedia Tools and Applications* 81.13 (2022): 17989-18009.

3. **Singh, A.,** Singh, T.D. & Bandyopadhyay, S. An encoder-decoder based framework for Hindi image caption generation. *Multimed Tools Appl* (2021). https://doi.org/10.1007/s11042-021-11106-5 (SCIE, IF 2.757)

4. **Singh, A.**, Singh, T.D. & Bandyopadhyay, S. Attention based video captioning framework for Hindi. *Multimedia Systems* (2021). https://doi.org/10.1007/s00530-021-00816-3 (SCI, IF-1.935)

5. Chakraborty, S., **Singh, A.**& Thounaojam, D.M. A novel bifold-stage shot boundary detection algorithm: invariant to motion and illumination. *Vis Comput* (2021). https://doi.org/10.1007/s00371-020-02027-9 (SCI, IF -2.601)

6. **Singh, A.**, Thounaojam, D. M., & Chakraborty, S. (2019). *A novel automatic shot boundary detection algorithm: robust to illumination and motion effect*. Signal, Image and Video Processing, 1-9. (SCI, IF 2.157). [[Code!]]

Conference Papers

1. Singh, A., Singh, S. M., Meetei, L. S., Das, R., Singh, T. D., & Bandyopadhyay, S. (2023). VATEX2020: pLSTM framework for video captioning. *Procedia Computer Science*, *218*, 1229-1237.

2. Meetei, Loitongbam Sanayai, et al. "Hindi to English Multimodal Machine Translation on News Dataset in Low Resource Setting." *Procedia Computer Science* 218 (2023): 2102-2109.

3. **Singh, A.,** Meetei, L. S., Singh, S.M., Singh, T.D., & Bandyopadhyay, S. An efficient keyframes selection based framework for video captioning. *In Proceedings of the International Conference on Natural Language Processing ICON-2021*

4. Meetei, L. S., Singh, S.M., **Singh, A.,** Singh, T.D., & Bandyopadhyay, S. An Experiment on Speech-to-Text Translation Systems for Manipuri to English on Low Resource Setting. *In Proceedings of the International Conference on Natural Language Processing ICON-2021*

5. Singh, S.M., Meetei, L. S., **Singh, A.,** Singh, T.D., & Bandyopadhyay, S. On the Transferability of Massively Multilingual Pretrained Models in the Pretext of the Indo-Aryan and Tibeto-Burman Languages. *In Proceedings of the International Conference on Natural Language Processing ICON-2021*

6. **Singh, A.**, Meetei, L.S., Singh, T.D., & Bandyopadhyay, S. *Generation and Evaluation of Hindi Image Captioning of Visual Genome.* In Proceedings of I3CS 2021 *https://doi.org/10.1007/978-981- 33-4084-8_7*.

7. Chakraborty, S., Thounaojam, D.M., **Singh, A.**, Pal, G., *ALO-SBD: A Hybrid Shot Boundary Detection Technique for video surveillance System.* In Proceedings of ADCOM 2020 (Accepted Rank- B)

8. De, P. K., Pankaj, and **Alok Singh**. *"A Study of Propagation of Love Waves in an Anisotropic Porous Layer Under Initial Stress."* Recent Trends in Applied Mathematics: Select Proceedings of AMSE 2019. Springer Singapore, 2021.

Workshop Papers/ Invited Papers/Preprints/Shared Task:

1. **Singh, A.,** Singh, T. D., & Bandyopadhyay, S. (2020).*A Comprehensive Review on Recent Methods and Challenges of Video Description*. arXiv preprint *arXiv:2011.14752*.

2. **Singh, A.**, Singh, T.D., & Bandyopadhyay, S. (2020). *NITS-VC system for VATEX Video Captioning Challenge 2020*. Invited Paper in workshop LVVU CVPR 2020 *arXiv preprint arXiv:2006.04058*(2020). [Online Presentation!]

3. **Shared Task**: VATEX Video captioning - In conjunction with CVPR 2020 [Result!]

4. **Ranked first in MSU** Shot Boundary Detection Benchmark 2020 challenge organised by Lomonosov MSU Graphics & Media Lab.**Team name: NITS-CV-Lab-v1.0** [Results!][Code!]

Datasets:

1. MSR-VTT Hindi video description dataset
   ● Available at: alokssingh/MSR-VTT-Hindi-video-captioning: This repository contains the MSR-VTT video captioning dataset in Hindi.
   ● Baseline model: https://github.com/alokssingh/RMN-MSR-VTT-Hindi-VC

Codes/Contact Details
1. Github: https://github.com/alokssingh
2. Website: Alok Singh
3. LinkedIn: https://www.linkedin.com/in/alokssingh/
4. Google Scholar: https://scholar.google.com/citations?user=K6ecfUwAAAAJ&hl=en

5. ResearchGate: https://www.researchgate.net/profile/Alok-Singh-97

Referees

- **Dr Thoudam Doren Singh:** Assistant Professor in the Computer Science and Engineering Department at NIT Silchar, India.
  Email: thoudam.doren@gmail.com, doren@cse.nits.ac.in
  Profile: http://cs.nits.ac.in/doren/

- **Prof. Sivaji Bandyopadhyay:** Director of National Institute of Technology Silchar and Professor in the Department of Computer Science and Engineering at Jadavpur University.
  Email: sivaji.cse.ju@gmail.com
  Profile: http://www.jaduniv.edu.in/profile.php?uid=2

- **Dr Dalton Meitei Thounaojam:** Assistant Professor in the Computer Science and Engineering Department at NIT Silchar, India.
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