ALOK SINGH

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Research Interests

Video shot boundary detection, Video captioning, Image captioning, Image processing, Machine Learning, and Natural Language generation.

Educational Qualification

National Institute of Technology, Silchar **2019 - current**
Ph.D, 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%)

Research Activities

Center for Natural Language Processing, NIT Silchar, India **July, 2019-current**
Supervisors: Dr Thoudam Doren Singh and Prof.Sivaji Bandyopadhyay
Ongoing research: Visual Description Generation: bridging a gap between vision and natural language. The objective of the research is 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
Area of research: Temporal Shot Boundary Detection in the presence of illumination and motion effect in a video.
The objective of the research was 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.

Publications

Journal Papers

1. **Singh, A.,** Singh, T.D. & Bandyopadhyay, S. V2T: video to text framework using a novel automatic shot boundary detection algorithm. *Multimed Tools Appl* (2022). **(SCIE, IF-2.757)**

2. **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)

3. **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)

4. 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)

5. **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). https://doi.org/10.1007/s11760-019-01593-3 [Code!]

Conference Papers

1. 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 2022* https://doi.org/10.1007/978-981-19-0019-8_51

2. **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* **(Accepted)**

3. 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 **(Accepted)**

4. 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* **(Accepted)**

5. **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.

6. 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 Department of Computer Science and Engineering 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 Department of Computer Science and Engineering at NIT Silchar, India.
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