

# Alok Singh

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## RESEARCH INTERESTS

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Natural Language Generation, Video Captioning, Image Captioning, Image Processing, and Video Shot Boundary Detection.

## EDUCATION

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- **National Institute of Technology Silchar** Assam, India  
*PhD, Computer Science and Engineering* July 2019 - Aug 2022
- **National Institute of Technology Silchar** Assam, India  
*M.Tech, Computer Science and Engineering; 8.88/10 CGPA* July 2017 - May 2019
- **Uttarakhand Technical University** Uttarakhand, India  
*B.Tech, Information Technology; 7.39/10 CGPA* Aug 2012 - May 2016

## EXPERIENCE

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- **University of Oxford** Oxford, United Kingdom  
*Research Associate in Machine Learning and Data Science* Nov 2022 - Present

## RESEARCH ACTIVITIES

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- **Sustainable Finance Group, SSEE University of Oxford** Oxford, United Kingdom  
*Research Associate: Dr Ben Caldecott and Dr Steven Reece* Nov 2022 - Present
  - **Asset Ownership**: Mapping Asset level data to companies using Natural language processing and computer vision. It involved the extraction of information from different sources using natural language processing and location with the help of satellite images.
  - **Decarbonising Agriculture**: This work aims to decarbonise the Agriculture sector of the whole UK and it combines work to measure and monitor sources of greenhouse gas emissions in the sector at the farm level, with the development of relevant decarbonisation pathways for the sector. This project would also produce open methodologies, datasets and pathways as part of a wider collaboration with Banking for Impact on Climate in Agriculture (B4ICA).
- **Centre for Natural Language Processing, NIT Silchar** Assam, India  
*Research Assistant - Dr Thoudam Doren Singh and Prof. Sivaji Bandyopadhyay* July 2019 - August 2022
  - **Multilingual Video Captioning**: Visual Description Generation: bridging a gap between vision and natural language. This 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** Assam, India  
*Research Assistant- Dr Dalton Meitei Thounaojam* July 2017- May 2019
  - **Temporal Video Segmentation**: 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.

## TECHNICAL SKILLS:

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- **Languages**: Python, C, MATLAB
- **Frameworks & Tools**: Pytorch, Numpy, NLTK, Keras, Quantum GIS.

## ACADEMIC ACTIVITIES

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- **Workshop/Conference Organised**: Co-organiser of ClimateNLP 2024 workshop in conjunction with ACL 2024.
- **Journals Reviewing**: Multimedia Tools and Applications, Applied Intelligence, Applied Artificial Intelligence, Imaging Science Journal, Expert Systems With Applications
- **Conference Reviewing**: ICON-2021, ICICSA2023, ICON-2023
- **Talks/Tutorials**
  - Presented a talk on Asset Ownership: Mapping Asset level data to companies using NLP at the Natural Language Processing for Sustainable Finance Programme Symposium (University of Oxford). [Online Presentation!]
  - 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!]

## ACADEMIC ACHIEVEMENTS

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- Organising member of first workshop on NLP for Climate : ClimateNLP 2024 (ACL 2024)
- 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!]
- Shared Task: VATEX Video captioning - In conjunction with CVPR 2020 [Result!]
- Datasets: MSR-VTT Hindi video description dataset [Available here] [Baseline model]

## PUBLICATIONS: JOURNALS PAPERS

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- 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.
- Singh, Alok, Thoudam Doren Singh, & Sivaji Bandyopadhyay. "V2t: video to text framework using a novel automatic shot boundary detection algorithm." *Multimedia Tools and Applications* 81.13 (2022): 17989-18009. (SCIE, IF- 3.9)
- 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- 3.9)
- 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> (SCIE, IF- 2.577)
- 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> (SCIE, IF- 3.5)
- 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 2.3). [Code!]

## PUBLICATIONS: CONFERENCE PAPERS

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- Singh, S. M., Meetei, L. S., Singh, A., Das, R., Singh, T. D., & Bandyopadhyay, S. (2023). VATEX2020: pLSTM framework for video captioning. *Procedia Computer Science*, 218, 1229-1237.
- Meetei, L. S., Singh, A., Singh, S. M., Das, R., Singh, T. D., & Bandyopadhyay, S. "Hindi to English Multimodal Machine Translation on News Dataset in Low Resource Setting." *Procedia Computer Science* 218 (2023): 2102-2109.
- 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*
- 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*
- 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*
- 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](https://doi.org/10.1007/978-981-33-4084-8_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)
- 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.

## CODES/CONTACT DETAILS

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- LinkedIn: <https://www.linkedin.com/in/alokssingh/>
- Google Scholar: <https://scholar.google.com/citations?user=K6ecfUwAAAAJ&hl=en>
- ResearchGate: <https://www.researchgate.net/profile/Alok-Singh-97>

## REFEREES

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- **Dr Ben Caldecott:** Director, Oxford Sustainable Finance Group and the Lombard Odier Associate Professor and Senior Research Fellow. **Email:** ben.caldecott@smithschool.ox.ac.uk **[Profile!]**
- **Dr Steven Reece:** Head of Machine Learning Research and Data Science, Oxford Sustainable Finance Group  
**Email:** steven.reece@smithschool.ox.ac.uk Profile: **[Profile!]**
- **Dr Thoudam Doren Singh:** Assistant Professor in the Computer Science and Engineering Department at NIT Silchar, India. Email: thoudam.doren@gmail.com, **[Profile!]**
- **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!]**
- **Dr Dalton Meitei Thounaojam:** Assistant Professor in the Computer Science and Engineering Department at NIT Silchar, India. **Email:** dalton.meitei@gmail.com, **[Profile!]**