CARRER OBJECTIVE

My goal is to develop solutions that enhance societal resilience against natural hazards. I use a combination of artificial intelligence, satellite imagery and physics based models to ascertain the drivers of natural hazards and devise preventive measures.

Research Interests

Natural Hazards, Deep Learning and Computer Vision, Land Surface Modelling, Optical and SAR remote sensing, Geographic Information Systems, Cloud Computing, High Performance Computing

Education

•	Indian Institute of Technology - Delhi Research Scholar Department of Civil Engineering	Delhi, India <i>Sep. 2020 –</i>
	 Theses: Investigating rainfall triggered landslides using land surface models and machine SERB OVDF scholar at University of Alberta: Sep. 2023 - Sep. 2024 	e learning
•	 Indian Institute of Technology - Guwahati Master of Technology in Civil Engineering; CGPA: 9.62/10 • Theses: Soil moisture inversion from SAR data using machine learning 	Guwahati, India Aug. 2018 – Jun. 2020
•	 DAAD-KOSPIE scholar at TU Darmstadt: Sep. 2019 - Apr. 2020 National Institute of Technology- Hamirpur Bachelor of Technology in Civil Engineering; CGPA: 8.33/10 	Hamirpur(H.P), India Aug. 2014 – May. 2018

 $\circ~$ ACC cements excellence scholarship: 2014-2018

Awards and Scholarships

Funding Agency	Year	Description
SERB OVDF	2023-2024	Overseas Visiting Doctoral Fellowship at University of Alberta
Ministry of Human Resources	2020-2025	Institute scholarship for doctoral study at IIT-Delhi
DAAD-KOSPIE	2019-2020	Exchange fellowship for research at TU Darmstadt
Ministry of Human Resources	2018-2020	Institute scholarship for masters study at IIT- Guwahati
Government of Himachal Pradesh	2018	One time grant for Higher studies
Associated Cements 2014-2018		Excellence scholarship for undergraduate studies at NIT Hamirpur

Grants

Funding Agency	Year	Description			
IIT-Delhi	2024	Research Excellence Travel Grant for a visit to the EGU 2025			
Climate Change AI	2024	Travel grant for CCAI summer school 2024 at Quebec AI Institute Montreal			
IEEE-GRSS	2024	Student travel grant to present my research at IGARSS 2024			
IIT-Delhi	2023	Overseas Travel Grant(RSTA) for a visit to EGU 2023			

EXPERIENCE AND INTERNSHIPS

Teaching Assistant- IIT Delhi

• Teaching Assistant for Data-Driven Methods, Numerical Methods and Engineering Hydrology

Teaching Assistant- IIT Guwahati

Teaching Assistant for Remote Sensing, and Natural Hazards

Sep. 2020 - Present

Aug. 2018 - July. 2019

• Larsen and Toubro Limited- INSPIRE Internship Rework reduction and productivity enhancement of large building	Jun. 2017-Aug. 2017	
• International Institute of Information Technology Evapotranspiration analysis of Krishna river basin using Thorn	Dec. 2016-Jan. 2017	
• Beas Valley Power Corporation- Government of H Social, Economical and Ecological impacts of a Hydroelectric po	Jun.2015-Aug 2015	
Academic Acheivments		
• Winner of the Highest Novelty in AI award at the IG	ARSS 2024 summer schoo	l
• Rank 1 Masters in Civil Engineering batch of 2020 at III	Γ Guwahati	
• Rank 1 in Class X CISCE Board, Himachal Pradesh, 201	12	
Skills		
• Languages: Python, Google Earth Engine, MATLAB	Softwares: SNAP, Arc	GIS, NASA-LISF, Q-GIS
• Productivity : MS Word, MS Powerpoint, MS Excel	Computation : High Performance Computing	
CERTIFICATIONS		
Introduction to Python, Radar Remote Sensing, Python Pro Programming	ogramming,Matlab fundan	nentals, Matlab
Memberships		
• Land Aware: Life member		

- IEEE GRSS: Student member
- American Geophysical Union : Student Member
- European Geophysical Union : Student Member

EXTRACURRICULAR

- Member NSS (2014-2018): Coordinated field visits for various social welfare schemes
- Organizer IRCSTC (2015): Organized a workshop on climate extremes at NIT Hamirpur with NEU Boston
- Training Placement Representative (2017-2018): Coordinated with over 20 companies

JOURNAL PUBLICATIONS

- N. Sharma* and M. Saharia: ML-CASCADE: A machine learning and cloud computing-based tool for rapid and automated mapping of landslides using earth observation data, Landslides, Sep. 2024 doi:10.1007/s10346-024-02360-3. GitHub WebTool
- N. Sharma*, M. Saharia, and G. V. Ramana: High resolution landslide susceptibility mapping using ensemble machine learning and geospatial big data. https://doi.org/10.1016/j.catena.2023.107653a GitHub WebTool
- N. Sharma* and M. Saharia: DeepSARFlood: Operational SAR-based Flood Mapping using Ensemble Deep Learning and a Novel Ensemble Model Selection Algorithm (Manuscript under review at ISPRS Journal of Photogrammetry and Remote Sensing) GitHub

PEER-REVIEWED CONFERENCE PUBLICATIONS

- N. Sharma^{*}, H. Malik, R. Joshi, and M. Saharia: Automated Landslide Extent Estimation from Sentinel 2 Data Using Computationally Efficient Deep Learning," in IGARSS 2024 2024 IEEE International Geoscience and Remote Sensing Symposium, Athens, Greece: IEEE, Jul. 2024, pp. 9579–9581. doi: 10.1109/IGARSS53475.2024.10640552. Article
- Pandey, R., Sharma, N.K.*, Saharia, M.: LoRa-Based Communication System for Monitoring Water Quality of Lakes and Reservoirs, in: 2023 International Conference on Machine Intelligence for GeoAnalytics and Remote Sensing (MIGARS) https://doi.org/10.1109/MIGARS57353.2023.10064590 Article

Conference Publications

- Sharma, N.* and Saharia, M.: DL-AISLE: A Deep Learning framework using Active Learning on Satellite imagery for Landslide identification, EGU General Assembly 2023, Vienna, Austria, 24–28 Apr 2023, EGU23-7155, https://doi.org/10.5194/egusphere-egu23-7155, 2023 Article
- Sharma, N.*, Saharia, M.: Identifying landslides from open-source satellite imagery using cloud computing ISRS-ISG symposium 2022
- Sharma, N.*, Saharia, M., Singh, R., 2021 : Toward High-Resolution Soil Moisture Monitoring over India by Combining Remote Sensing Products with Land Surface Models 2021, H55D-0780. Article
- Sharma, N.*, Singh, A., P, A., Saharia, M., C T, D., 2021: Flood Exposure and Social Vulnerability during 2020 Assam Floods (other). Hydrology. https://doi.org/10.1002/essoar.10509510.1 GitHub Article
- N Sharma*: Using TROPOMI to map change in NO2 over India in covid-19. https://doi.org/10.5281/zenodo.4569495 GitHub Article
- N. Sharma* and M. Saharia: A Cloud-Based Landslide Identification Algorithm for Rainfall-Triggered Landslides, vol. 2022, pp. NH25D-0472, Dec. 2022.
- R. Joshi, N. Sharma*, and M. Saharia: Vulnerability of Infrastructure to landslides in India, vol. 2023, pp. H15-02, Dec. 2023