

AKASH KUMAR

PhD Scholar, Geospatial Engineering
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Research Profiles

 ORCID

 LinkedIn

 Github

 ResearchGate

 Google Scholar

Education

- 2022 – Present : **Geospatial Engineering – Indian Institute of Technology Roorkee**
Ph.D. Thesis: Multi-scale analysis of crop phenology using PhenoCam & satellite data
- 2020 – 2022 : **Geoinformatics – Maulana Azad National Institute of Technology, Bhopal**
M.Tech⁺ Thesis: A web-GIS based approach for mapping rice residues burning and generated pollutants over Punjab
- 2014 – 2018 : **Civil Engineering – Meerut Institute of Engineering & Technology, Meerut**
B.Tech

⁺ Branch Gold Medalist (9.51 CGPA)

Experience

- 2023 – Present : **Bhoomicam Pvt Ltd (IIT Roorkee)**
Geospatial agritech startup for precision agriculture.
- | | |
|--|---------------------|
| Co-Director | Apr 2025 – Present |
| Handling operations and B2B partnerships. | |
| Chief Remote Sensing Scientist | Jun 2023 – Apr 2025 |
| Led the technical team in building geospatial solutions for crop monitoring. | |
- 2018 – 2019 : **Civil Site Engineer – BHEL, Yelahanka (Bengaluru)**
Supervised construction activities, executed quality control and designs with on-site teams.

Publications

Peer-Reviewed Journals

- [1] **Akash Kumar**, Siddhartha Khare, and Sergio Rossi (2025). PhenoAI: A deep learning Python framework to process close-range time-lapse PhenoCam data. *Ecological Informatics*, (88), 103134. <https://doi.org/10.1016/j.ecoinf.2025.103134>.
- [2] **Akash Kumar**, Ganesh Sai Sivani Noolu, Siddhartha Khare, and Sergio Rossi (2025). A comparison of PhenoCam and satellite indices with in-situ observations for black spruce in the boreal forest of Quebec, Canada. *Ecological Informatics*, (88), 103137. <https://doi.org/10.1016/j.ecoinf.2025.103137>.

International Conference

- [1] **Akash Kumar**, Noolu G. S. Sivani, Siddhartha Khare, and Sergio Rossi (2024). Linking Phenocam Derived Phenology With Satellite and Field Observations in the Evergreen Forest. *2024 IEEE India Geoscience and Remote Sensing Symposium (InGARSS)*. 2024. <https://doi.org/10.1109/InGARSS61818.2024.10984047>.

Book Chapter.....

- [1] Tushar Bharadwaj, **Akash Kumar**, and Siddhartha Khare (2023). Smart agriculture platforms: Case studies. *Technological Prospects and Social Applications of Society 5.0*. CRC Press, 2023, 169–176. <https://doi.org/10.1201/9781003324720-15>.

Manuscripts Under Review & Preparation.....

- [1] **Akash Kumar**, Zainab Khan, Siddhartha Khare, Umesh Kumar Saxena, and Purushottam Kumar (2025). Integrating PhenoCam and AWS Data to Quantify Stage-Specific Climatic Impacts on Rice Phenology. *Remote Sensing Applications: Society and Environment*. (Under Review).
- [2] **Akash Kumar** and Siddhartha Khare (2025). Deep Learning based field segmentation and multi-temporal Sentinel-2 analysis for crop yield estimation for smallholder systems of India. (*Manuscript in Preparation*).
- [3] **Akash Kumar** and Siddhartha Khare (2025). Evaluation of PlanetScope and Sentinel-2 derived wheat crop phenology using infrared-enabled PhenoCam and field observations. *International Journal of Applied Earth Observation and Geoinformation*. (Under Review).

Conferences & Workshops

Attended/Presented.....

Presented : GeoSmart India Conference & Expo 2025, New Delhi [View Post](#)

Attended : Workshop on Synthetic Aperture Radar (SAR) 2025, IIT Tirupati

Paper : India Geoscience and Remote Sensing Symposium (InGARSS) 2024, NIT Goa [View Post](#)

Poster : International Conference on Geomatics in Civil Engineering 2024, IIT Roorkee

Attended : 2nd Roorkee Water Conclave 2023, NIH Roorkee

Attended : Natural-Hazard Symposium for the Indian Himalayas 2022, IIT Roorkee

Conducted/Helped Conducting.....

Workshop : Modern Surveying Instrument Karyashala – 2023, IIT Roorkee (TA)

Training : Google Earth Engine, 2022, NIGMT New Delhi (Online)

Training : Google Earth Engine, 2021, MANIT Bhopal (Water Resource Dept.)

Fellowships & Grants

2025: NPTEL TA for 8-Week Course (INR 1,00,000) [View TA List](#)

2024: InGARSS Travel Grant for Conference (USD 250)

2022: First Prize Winner, National Geospatial Startup Competition by AABSyS (INR 50,000) [View](#)

2022: SRF & MHRD Scholarship for PhD

2020: MHRD Scholarship for Post-Graduation

Teaching Assistantship Experience

Academic Courses.....

2023,24,25/Spring : Geospatial Engineering-I (CEN-102), Dept. of Civil, IIT Roorkee

2022,23,24,25/Autumn : Geospatial Engineering-II (CEN-201), Dept. of Civil, IIT Roorkee

2022/Spring : Basics of Remote Sensing Technology (GI-103), MANIT Bhopal

2021/Autumn : Digital Processing of Remotely Sensed Data (GI-202), MANIT Bhopal (Online Tutorials)

Others.....

+2025 & 2026, Jan–Mar: Digital Land Surveying & Mapping (NOC25_CE13), NPTEL, IIT-Roorkee

- ☆2023–24/Spring : External Academic Mentor of Mr. Dipanshu Priyadarshi, Gati Shakti Vishwavidyalaya, Vadodara
- 2022–Present : Multiple Hands-on Practical Sessions for Railways/Land Planning/etc Officers at GNEC, Noida (Extension Centre of IIT Roorkee)
- Dec 2022 : Survey Camp for 2nd Year UG Students (Led on-field surveying and managed 120+ students)

+ Course Coordination, Uploads, Assignments and Query Resolution

☆ UG Project Title: Land Use Land Cover Change Detection of Vadodara District

Technical Skills

Software.....

- Programming** : Python, R
- Data & Statistics** : Advanced MS Office, SAS JMP Pro, LaTeX, MS Visio, SigmaPlot
- Geospatial Analysis** : Google Earth Engine, QGIS, ArcGIS Pro, ERDAS IMAGINE, iGIS
- Photogrammetry** : Pix4D Mapper, FARO Scene, CloudCompare
- GPS & Geotagging** : Emlid Studio, Spectrum Survey Office, QBase
- Spectral Analysis** : SVC's Spectra Vista, ENVI
- Civil Engineering** : Autodesk AutoCAD 3D, Revit Architecture, STAAD.Pro

Instrument Handling.....

- UAVs** : IdeaForge Q6 (RGB + Multispectral), Trinity F90+ Hybrid VTOL (LiDAR + Oblique RGB), DJI Matrice 100, Agri-Spray Drone (Quad- & Hexacopter)
- Sensors** : PhenoCam Camera, Automated Weather Station (AWS), Spectroradiometer SVC XHR-1024i
- GPS** : Trimble DA2, Emlid Reach RS2/RS3 RTK, Sokkia GRX2
- TLS** : FARO Terrestrial Laser Scanner (TLS)
- Surveying** : Total Station (Robotic + EDM), Analytical Theodolite, Digital/Auto/IOP/Dumpy Level

Professional Service

Peer-Reviewer.....

- Ecological Informatics* (22+)
- International Journal of Applied Earth Observation and Geoinformation* (9+)
- Information Processing in Agriculture* (4)
- MDPI Remote Sensing* (1)
- Environmental Monitoring and Assessment* (1)

Member.....

- IEEE GRSS (Geoscience and Remote Sensing Society); IIM (Indian Institute of Metals)

Certifications

- 2025 : **Remote Sensing Data Analytics for Crop Production Forecasting** – IIRS, Dehardun (20251682771553)
- 2024 : **UAV Pilot Certificate** – IdeaForge (NP2317)
- 2022 : **Getting Started with Spatial Analysis** – Esri
- 2021 : **Basics of Geocomputation and Geoweb Services** – IIRS, Dehardun (2021891325486)
- 2020 : **Overview of Geoprocessing using Python** – IIRS, Dehardun (IIRS202073592046)
- 2020 : **Fundamentals of GIS** – Udemy (University of California, Davis)
- 2020 : **Excel Essentials: Level 1, 2 & 3** – Udemy

Extracurricular Experience & Activities

- 2022–Present** : Represented Startup Bhoomicam Pvt Ltd at multiple Startup Expos and Innovation Events, including:
- NTRO AI Grand Challenge Hackathon 2025 (New Delhi) – [Shortlisted at Stage 1 \(INR 8,00,000\)](#)
 - Climate Innovation Summit 2025 (Dehradun)
 - Operation Dronagiri 2025 (IIT Tirupati)
 - Defense Surya Drone Tech 2025 (Dehradun)
 - NASSCOM Technology Confluence 2024 (Chandigarh)
 - TIPS 4.0 2024 (IIT Bombay)
 - India International Science Festival (IISF 2023) (MANIT Bhopal)
 - Krishi Vigya Kendra's Outreach programs (Villages around Roorkee)
- 2025, Jul** : Geospatial Mapathon 2025, organized by IIT Bombay FOSSEE – [Winners List](#)
- 2025, Jul** : NRSC Offline Coding Challenge 2025, organized by ISRO – [Second Prize](#)
- 2024, Oct** : NASA Space Apps Challenge 2024 – Participant
- 2022–2024** : Inter-Bhawan Chess Tournament, IIT Roorkee – [3 Gold Medals \(2022, 2023, 2024\)](#)
- 2016, Mar** : Guinness World Record Holder – World's Biggest Orchestra (Guitarist) (Art of Living Foundation, New Delhi)
- 2014, Oct** : UP Open Chess Tournament (U-17) – **Ranked #3**

References

Prof. Siddhartha Khare: IIT Roorkee

siddhartha.khare@ce.iitr.ac.in

Prof. S. K. Katiyar: MANIT Bhopal

skatiyar7@rediffmail.com

Prof. Kamal Singh: MANIT Bhopal

singhk@manit.ac.in