

## RESUME



**Priyadarshi Upadhyay, Ph.D. (Geomatics Engineering, IITR)**

**Scientist/Engineer-SD**

Soil and Agriculture Division

Uttarakhand Space Application Centre, Dehradun

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### Specialization:

- Remote sensing and GIS applications in natural and manmade resource management; Time series remote sensing soft computing, machine learning algorithm for specific land cover extraction; Geospatial assessment of soil parameters, Training&Capacity Building.

### Academic Qualification:

- **Ph.D. in Geomatics Engineering** (2014) from IIT Roorkee, Roorkee.
- **M.Tech. Remote Sensing** (2007) from BIT Mesra Ranchi, Ranchi.
- **M.Sc. Physics**(2004) from Govt. P.G. College Pithoragarh, Kumaun University Nainital.

### Experience: (Over 16 Years in Research and Academics)

- Dec 2017 onwards: Working as **Scientist/Engineer-'SD'** at USAC, Dehradun, India
- July 2014 to Dec 2017: **Assistant Professor**, Shoolini University, Solan, India.
- Mar 2014 to Jun 2014: **Assistant Professor**, Himgiri Zee University, Dehradun, India
- July 2011 to Mar 2014: **Senior Research Fellow**, IIT Roorkee, Roorkee, India
- July 2009 to July 2011: **Junior Research Fellow**, IIT Roorkee, Roorkee, India
- May 2008 to July 2009: **Remote Sensing Engineer**, IL&FS Pvt. Ltd, New Delhi, India
- July 2007 to Mar 2008: **Junior Research Fellow**, DRDO, New Delhi, India.
- July 2006 to July 2007: **Trainee**, DRDO, New Delhi, India.

### Project Works (last 5 years):

Project Title	Funding	Status	Duration
Forecasting Agriculture outputs using the Space Agrometrology & Land based observations (FASAL)	MNCFC, DACF&W, Govt. of India	Ongoing	June 2018 onwards
Active Agriculture Mapping using Time Series Satellite Data	State Govt. Uttarakhand	Ongoing	April 2020 onwards
Generation of Village Level Digital Soil Fertility Nutrient Maps using Soil Health Card Data	MoAFW, Govt. of India	Completed	April 2019 to March 2022
Multi-criteria Decision Analysis for Site Selection of Apple Crop Cultivation in Nainital District	State Govt. Uttarakhand	Completed	April 2019 to March 2020

## Academic/Research Awards, Honors and Recognitions

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- Awarded Ministry of Human Resources and Development (MHRD) and University Grant Commission (UGC), Govt. of India, **fellowships in Ph.D. and M.Tech.** respectively.
- Awarded **travel grant** from the Department of Science and Technology, Govt. of India for attending an International Conference.
- Qualified **National Eligibility Test (NET)** in Physics conducted by Council of Scientific and Industrial Research (CSIR) India in 2006.
- Qualified **Graduate Aptitude Test in Engineering (GATE)** in **2006** with all India rank 182 and **GATE 2005** with all India rank 300
- Chaired a session in an International Conference, **Agro-Geoinformatics 2014, Beijing**, China 2014.
- Reviewer of International Journals such as Geocarto International (Taylor & Francis), IEEE Geosciences and Remote Sensing Letters, Journal of Indian Society of Remote Sensing, Iranian Journal of Fuzzy System, Remote Sensing Applications: Society and Environment, Journal of Applied Remote Sensing.
- Reviewer of project proposals for Department of Science and Technology, Govt. of India and Indian Council of Medical Research (ICMR) for GIS applications, Govt. of India
- Member of expert panel for examination of **M.Tech. course** of Indian Institute of Remote Sensing (IIRS), ISRO, Dehradun and **Post Graduate diploma** course on Remote Sensing and GIS for Centre for Space Science & Technology Education in Asia Pacific (CSSTEAP) (Affiliated to United Nations)

## Publications:

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### *Books:*

1. Kumar A., **Upadhyay, P.**, and Kumar A.S., 2020. Fuzzy Machine Learning Algorithms for Remote Sensing Image Classification. **CRC, Press, Taylor & Francis Group**, Boca Raton, London, New York.  
<https://www.routledge.com/.../Kumar.../p/book/9780367355715>
2. Kumar A., **Upadhyay, P.**, and Uttara. S., 2023. Multi-Sensor and Multi-Temporal Remote Sensing: Specific single class mapping. **CRC, Press, Taylor & Francis Group**, Boca Raton, London, New York.  
<https://www.routledge.com/Multi-Sensor-and-Multi-Temporal-Remote-Sensing-Specific-Single-Class-Mapping/Kumar-Upadhyay-Singh/p/book/9781032428321>

### *International Journals:*

1. Mehrotra S., Kumar, A., Roy., A., and **Upadhyay, P.** 2023. Innovative fuzzy models for mapping Acacia catechu using semi-hypertemporal satellite images. IEEE Geoscience and Remote Sensing Letters *VOL. 20, 2023 (IEEE)*. DOI [10.1109/LGRS.2023.3282973](https://doi.org/10.1109/LGRS.2023.3282973).
2. Pancholi S., Kumar, A., **Upadhyay, P.**, and Asgher, S., 2023. Fuzzy machine learning model for handling non-linearity and heterogeneity within a class for mapping sugarcane ratoon types and plant fields. Remote Sensing Applications: Society and Environment (*Elsevier*), *Under Review*.

3. **Upadhyay, P.**, Bisht, M.P.S. & Uniyal, D. Multi-criteria Decision Analysis for Site Selection of Apple Crop Cultivation: Case Study of Nainital, Uttarakhand. *J Indian Soc Remote Sens* **50**, 347–358 (2022) (*Springer*). <https://doi.org/10.1007/s12524-021-01470-y>
4. Chhapariya, K., Kumar, A., **Upadhyay, P.**, 2021. Kernel based MPCM algorithm with spatial constraints and local contextual information for mapping paddy burnt fields. *Journal of the Indian Society of Remote Sensing* (*Springer*). <https://doi.org/10.1007/s12524-021-01346-1>
5. Rawat A. Kumar, A., **Upadhyay, P.** and Kumar S., 2021. A Comparative Study of 1D-Convolutional Neural Networks with Modified Possibilistic c-Mean Algorithm for Mapping Transplanted Paddy Fields Using Temporal Data. *Journal of the Indian Society of Remote Sensing* (*Springer*), <https://doi.org/10.1007/s12524-020-01303-4>
6. Rawat A. Kumar, A., **Upadhyay, P.** and Kumar S., 2021. "Deep Learning-Based Models for Temporal Satellite Data Processing: Classification of Paddy transplanted fields. *Ecological Informatics* (*Elsevier*) <https://doi.org/10.1016/j.ecoinf.2021.101214>
7. Rawat A. Kumar, A., **Upadhyay, P.** and Kumar S., 2020. Multisensor temporal approach for transplanted paddy fields mapping using fuzzy-based classifiers. *Journal of Applied Remote Sensing (SPIE)* **14**(2), 024524 (25 June, 2020) <https://doi.org/10.1117/1.JRS.14.024524>
8. Chhapariya, K., Kumar, A. & **Upadhyay, P.**, 2020. A fuzzy machine learning approach for identification of paddy stubble burnt fields. *Spatial Information Research (Springer)*. (2020). <https://doi.org/10.1007/s41324-020-00356-4>
9. Chhapariya, K., Kumar, A., **Upadhyay, P.**, 2020. Handling non-linearity between classes using spectral and spatial information with kernel based modified possibilistic c-means classifier, *Geocarto International* (*Taylor & Francis*). DOI: [10.1080/10106049.2020.1797186](https://doi.org/10.1080/10106049.2020.1797186)
10. Singh A., Kumar, A., **Upadhyay, P.**, 2020. Modified possibilistic c- means with constraints (MPCM-S) approach for incorporating the local information in a remote sensing image classification. *Remote Sensing Applications: Society and Environment*, Volume 18, 2020, 100319, ISSN 2352-9385. (*Elsevier*) <https://doi.org/10.1016/j.rsase.2020.100319>.
11. Singh A., Kumar, A., **Upadhyay, P.**, 2020. A novel approach to incorporate local information in Possibilistic c-Means algorithm for an optical remote sensing imagery. *The Egyptian Journal of Remote Sensing and Space Science*, 2020, ISSN 1110-9823, (*Elsevier*) <https://doi.org/10.1016/j.ejrs.2020.06.001>.
12. Vincent, A., Kumar, A. & **Upadhyay, P.**, 2020. Effect of Red-Edge Region in Fuzzy Classification: A Case Study of Sunflower Crop. *J Indian Soc Remote Sens* **48**, 645–657 (*Springer*) <https://doi.org/10.1007/s12524-020-01109-4>
13. **Upadhyay, P.**, Ghosh, S. K. and Kumar, A., 2016. Temporal MODIS Data for Identification of Wheat Crop using Noise clustering Soft Classification Approach. *Geocarto International* (*Taylor & Francis*, **Impact Factor: 1.370**), Vol. 36, pp. 278-295. <http://dx.doi.org/10.1080/10106049.2015.1047415>

14. **Upadhyay, P.**, Ghosh, S. K., Kumar, A., Krishna Murthy Y.V.N. and Raju P.L.N., 2014. Moist Deciduous Forest Identification using MODIS Temporal Indices Data. *International Journal of Remote Sensing (Taylor & Francis)* Vol. 35 (9), pp. 3177-3196, (ISSN 0143-1161 & 1366-5901, **Impact Factor: 1.652**).  
<http://www.tandfonline.com/doi/full/10.1080/01431161.2014.903438>
15. **Upadhyay, P.**, Ghosh, S. K. and Kumar, A., 2014. A Brief Review of Fuzzy Soft Classification and Assessment of Accuracy Methods for Identification of Single Land Cover. *Studies in Surveying and Mapping Science (SSMS), American Society of Science and Engineering*, Vol. 2, pp. 1-13, (ISSN 2328-6245 & 2328-6253).  
<http://www.as-se.org/ssms/paperInfo.aspx?ID=13800>
16. **Upadhyay, P.**, Ghosh, S. K. and Kumar, A., 2013. Moist Deciduous Forest Identification using Temporal MODIS Data- a comparative study using fuzzy based classifiers. *Ecological Informatics (Elsevier)*, Vol. 18, pp. 117-130, (ISSN 1574-9541, **Impact Factor: 1.980**).  
<http://dx.doi.org/10.1016/j.ecoinf.2013.07.002>
17. **Upadhyay, P.**, Kumar, A. and Ghosh, S. K., 2013. Fuzzy Based Approach for Moist Deciduous Forest Identification using MODIS Temporal Data. *Journal of Indian Society of Remote Sensing (Springer)*, Vol. 41, No. 4, pp. 777-786, (ISSN 0255-660X & 0974-3006, **Impact Factor: 0.764**).  
<http://dx.doi.org/10.1007/s12524-013-0267-2>
18. **Upadhyay, P.**, Kumar, A., Roy, P.S., Ghosh, S. K. and Gilbert, I., 2012. Effect on Specific Crop Mapping Using WorldView-2 Multispectral Add-on Bands: Soft Classification Approach. *Journal of Applied Remote Sensing (SPIE)* 6, 063524, (ISSN 1931-3195, **Impact Factor: 1.183**).  
<http://remotesensing.spiedigitallibrary.org/article.aspx?articleid=1352359>

#### **Book Chapters:**

1. Sood, A., Ghosh, S.K. and **Upadhyay, P.**, 2021. Impact of Land Cover Change on Surface Runoff. *Advances in Remote Sensing for Natural Resource Monitoring*, Wiley, 150-169. <https://doi.org/10.1002/9781119616016.ch10>

#### **International Conferences:**

1. **Upadhyay, P.**, Uniyal, D. and Bisht, M.P.S., 2019. Hyperspectral Remote Sensing for Temperate Horticulture Fruit Crops in Northern-Western Himalayan Region: A Review, *Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci.*, XLII-3/W6, 333-338, <https://doi.org/10.5194/isprs-archives-XLII-3-W6-333-2019>, 2019.
2. **Upadhyay, P.**, Ghosh, S. K. and Kumar, A., 2014. Entropy Based Noise Clustering Soft Classification Method for Identification of Wheat Crop using Time Series MODIS Data. *Agro-Geoinformatics 2014, IEEE Xplore database*, Beijing, China, Aug 11-Aug 14, 2014. <http://dx.doi.org/10.1109/Agro-Geoinformatics.2014.6910670>.
3. **Upadhyay, P.**, Ghosh, S. K. and Kumar, A., 2013. High Resolution Temporal Normalized Difference Vegetation Indices for Specific Crop Identification, *Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci.*, XL-1/W1, 351-355, doi: 10.5194/isprsarchives-XL-1-W1-351-2013, 2013. <http://www.int-arch-photogramm-remote-sens-spatial-inf-sci.net/XL-1-W1/351/2013/isprsarchives-XL-1-W1-351-2013.pdf>

### ***National Conferences:***

1. **Upadhyay, P.**, Kumar, A. and Ghosh, S. K., 2012. Comparative study of MODIS temporal NDVI and EVI data for wheat crop identification using soft classification approach. National Symposium on Space Technology for Food & Environmental Security, New Delhi, India, December 5-7, 2012.
2. **Upadhyay, P.**, Kumar, A., Ghosh, S. K., and Roy, P.S., 2011. Comparative study of class based and sensor based indices for specific crop mapping using single source WorldView-2 temporal data. Indian Society of Remote Sensing, Bhopal, India. November 9-10, 2011.
3. **Upadhyay, P.**, Joglekar, P.N., and Patel, P., 2009. Microwave Remote Sensing based Soil Moisture Inversion for Bare and Crop Covered Fields. National seminar on Radar Remote Sensing and its Application, Indian Institute of Technology Roorkee, Uttarakhand, India, September, 2009.
4. **Upadhyay, P.**, Joglekar, P.N., Pandey A.C. and Patel, P., 2008. Performance of various backscattering model and soil moisture mapping using the RADARSAT data. International conference of Radio Science (ICRS) Jodhpur, February, 2008.

### **Training Programs Attended:**

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- Attended 2 Weeks training program on "**LiDAR Remote Sensing and its applications**" from July 29, 2019 to August 09, 2019, Organized by Indian Institute of Remote Sensing, Indian Space Research Organisation (ISRO), Department of Space, Govt. of India.
- Attended 2 days training program on '**Advances of Remote Sensing for Agriculture**' at New Delhi from Feb 21-22, 2019, Organized by International Society of Photogrammetry and Remote Sensing (ISPRS) WG III/10 , GEOGLAM and ISRS.

### **Memberships:**

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- The Institute of Engineers (India).
- Indian Society of Remote Sensing (ISRS)

### **Social outreach related activities as a scientist/academician:**

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1. Co-ordinated three days Training Workshop on 'Use of Geospatial Technology in Effective Audits' for the Officials of 'Office of Principal Accountant General (Audit), Uttarakhand from Nov 30 to Dec 2021.
2. Co-ordinated one Day Seminar on 'Application of Satellite Remote Sensing in Natural Resource Management' at V.S.K.C. Govt. Degree College, Dakpathar, Vikasnagar, Dehradun on Feb 18, 2020.
3. Co-ordinated two days training on 'Remote Sensing and GIS' for assistant agriculture officers of Haridwar district from Jan 13 to Jan 14, 2020.
4. Co-ordinated two days training on 'Remote Sensing and GIS' for assistant agriculture officers of U.S. Nagar district from Jan 20 to Jan 21, 2020.
5. Co-ordinated one day training program for GIS Analyst/Technician of different District GIS cell on Feb 11, 2020.
6. Co-ordinated two days 'In-house Capacity Building Training Program on Advanced Geospatial Techniques' for all the scientists and scientific staff of USAC from Sep 23-Sep 24, 2019.

7. Co-ordinated one day training program on 'Utilization of Geospatial technology in Agriculture & Horticulture sector' for the officials of statistical officers of the state agriculture department, Govt. of Uttarakhand on Sep 21, 2019.
8. Co-ordinated a training program on 'Recent Advances in Agriculture Surveys: Remote Sensing and GIS Applications' for the participants from African Asian Rural Development Organization (AARDO) on March 28, 2019.
9. Co-ordinated one day capacity building program on 'Application of Remote Sensing and GIS for Disaster Management' at Govt. Degree College, Nainidanda, Patotiya, Pauri Garhwal on Aug 31, 2019.
10. Co-ordinated one day workshop on 'Role of Remote Sensing for Disaster Management' at Govt. Degree College Doiwala, Dehradun on Feb 8, 2019.
11. Co-ordinated one day training program on 'Remote sensing and GIS for the research scholars' of HNB Garhwal University (A Central University), Srinagar on Dec 24, 2018.

### **Administrative Support or Experience:**

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1. Chief Vigilance Officer of USAC, 2019 onwards
2. Chairman of purchase committee USAC 2020 onwards
3. Co-ordinator of Curriculum Development Civil Engg. Department, Shoolini University Solan from Jul 2017 to Dec 2017.
4. Superintendent of End Term Examinations, Shoolini University Solan in Dec 2016 and June 2017.
5. Co-ordinator for Examination Evaluation Centre, Shoolini University, Solan in Dec 2015 and June 2016.
6. Member of the committee for the recruitment of 'JRF/JPF' under 'Automatic Mapping using Hyperspectral Remote Sensing Data' Project on Feb 12, 2018.
7. Member of the committee for the recruitment of 'technical manpower' and 'field assistant' under HMNEH Project on Dec 14, 2018.
8. Member of the committee for the recruitment of 'JRF' and 'Data Entry Operator/field assistant' under 'Digital Soil Nutrient/Fertility Map' Project on Jun 10, 2019.
9. Member of the committee for the recruitment of 'Field Assistant' under project 'Geospatial Approach for Suitable Site Identification for conservation of some species of medicinal and aromatic plants (maps)' on July 8, 2019.
10. Member of the committee for the recruitment of 'JRF' and 'Data Entry Operator/field assistant' under 'Digital Soil Nutrient/Fertility Map' Project on July 8, 2019.
11. Chair of the committee for the recruitment of 'Field Assistant' under FASAL project on Aug 14, 2019.
12. Member of the committee for the promotion of Account assistant to Assistant Accountant on Nov 30, 2019.
13. Chair of the committee for the recruitment of 'JPF' under 'IWMP' Project on July 21, 2020.
14. Member of the committee for the recruitment of 'JPF' under 'NMHS-Himalayan Alpine Biodiversity Characterization and Information System Network' project on Jun 17, 2020.
15. Member of the committee for the recruitment of 'JRF, JPF and Field Assistant' for different projects on Nov 27, 2020.

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