NARAYAN KAYET, Ph.D.

Research Associate (RA-1), Indian Institute of Technology Kharagpur, C-105, VSRC-1 Hostel , West Bengal, India, Pin-721302, narayankayet@gmail.com , P: 91-8768694140

CAREER OBJECTIVE

To become a successful professional in Remote Sensing & GIS (Geoinformatics) and to work in innovative, competitive, research, and development-oriented works, which will help me to explore myself fully and realize my potential. I would also prefer to undertake challenging tasks related to Hyperspectral, and Microwave Remote Sensing applications in Forestry**,** Mining, and Environment Management.

EDUCATION

Doctor of Philosophy (Ph.D) from Dept of Remote Sensing and GIS, Vidyasagar University, (2021) (Collaboration with IIT, Kharagpur)

Topic**:** Forest Health monitoring using Hyperion Data for Geo-Environmental Planning of Iron Ore mining Belt, Saranda Forest, Jharkhand, India

Research summary**:** During my Ph.D., I evaluated the potential of hyperspectral satellite imagery and plants' spectral signature as a tool for assessment of forest health. I have developed a hyperspectral library of plant species for identification and diversity estimation. I have also created a hyperspectral satellite imagery-based new methodology for foliar dust estimation and validated it by measuring in the field. I also predicted forest health risk (FHR) for effective geo-environmental planning and monitoring of mining-affected forest areas in the hilltop region.

Masters of Science (M.Sc.) in Remote sensing and GIS from Vidyasagar University, Midnapore, West Bengal, India (2014)

Graduated in Geography (Hons) from Vidyasagar University,Midnapore, West Bengal, India (2012**)**

PUBLICATIONS

Journals

1. **Kayet, N**., Pathak, K., Singh, C. P. Chowdary V. M., Kumar Dheeraj and Shaik, I (Accepted **2022**) 'Vegetation health condition assessment and mapping using AVIRIS-NG hyperspectral and field spectroscopy data for geo-environmental impact assessment in coal mining sites' **Ecotoxicology and Environmental Safety (Elsevier)**, Scopus & SCI listed, Impact Factor -6.29
2. **Kayet, N.**, Pathak, K., Chakrabarty, A., Kumar, S., Chowdary, V. M. and Singh, C. P (**2021**) 'Deforestation susceptibility assessment and prediction in hilltop mining-affected forest region', **Journal of Environmental Management (Elsevier),** Scopus & SCI listed, Impact Factor -6.79 (https://doi.org/10.1016/j.jenvman.2021.112504).
3. **Kayet, N**., Pathak, K., Chakrabarty, A., Kumar, S., Singh, C. P., and Chowdary, V. M (**2020**) 'Risk assessment and prediction of forest health for effective geo-environmental planning and monitoring of mining affected forest area in hilltop region', **Geocarto International (Taylor & Francis)**, Page-1-25. Scopus & SCI listed, Impact Factor - 4.89 (https://doi.org/10.1080/10106049.2020.1849413).
4. **Kayet, N**., Pathak, K., Chakrabarty, A., Kumar, S., Chowdary, V. M. and Singh, C. P (**2020**) 'Assessment of mining activities in hilltop mining areas on tree species and diversity using Landsat and Hyperion data', **Environmental Science and Pollution Research (Springer),** Scopus & SCI listed, Impact Factor - 4.22 (https://doi.org/10.1007/s11356-020-09795-w).
5. **Kayet, N**., Pathak, K., Chakrabarty, A., Singh, C. P., Chowdary, V. M., Kumar, S., & Sahoo. (**2019**) 'Forest Health Assessment for Geo-Environmental Planning and Management in hilltop mining areas using Hyperion and Landsat data', **Ecological Indicators (Elsevier),** Scopus & SCI listed, Impact Factor - 4.95, Volume 106, 105471, (https://doi.org/10.1016/j.ecolind.2019.105471).
6. **Kayet, N**., Pathak, K., Chakrabarty, A., Kumar, S., Chowdary, V. M., Singh, C. P. & Basumatary, S. (**2019**). 'Assessment of foliar dust using Hyperion and Landsat satellite imagery for mine environmental monitoring in an open cast iron ore mining areas'. **Journal of Cleaner Production (Elsevier),** Scopus & SCI listed, Impact Factor - 9.23, Volume 218, 993-1006, (https://doi.org/10.1016/j.jclepro.2019.01.305).
7. **Kayet, N**., Pathak, K., Chakrabarty, A., &Sahoo, S. (**2018**). Evaluation of soil loss estimation using RUSLE model and SCS-CN method in hilltop mining areas. **International Soil and Water Conservation Research (Elsevier),** Scopus & SCI listed, Impact Factor -6.02, Volume, 6(1), 31-

42,(https://doi.org/10.1016/j.iswcr.2017.11.002).

8. **Kayet, N**., Pathak, K., Chakrabarty, A., &Sahoo, S. (**2018**). 'Mapping the distribution of iron ore minerals and spatial correlation with environmental variables in hilltop mining areas'**. Environmental Eearth Sciences (Springer),** Scopus & SCI listed, Impact Factor–2.78**,** Volume 77(8), 308 (https://doi.org/10.1007/s12665-018-7482-7).
9. **Kayet, N**., Pathak, K., Chakrabarty, A., &Sahoo, S. (**2018**) "Comparative analysis of multi-criteria probabilistic frequency ratio and analytic hierarchy process for forest fire risk zone mapping" **Journal of Forest Research (Springer),** Scopus & SCI listed, Impact Factor–2.14, Volume 30, 2018, page 1-15 (https://doi.org/10.1007/s11676-018-0826-z).
10. **Kayet, N**., Chakrabarty, A., Pathak, K., Sahoo, S., Mandal, S. P., Fatema, S., & Das, T. (**2018**). "Spatiotemporal LULC change impacts on groundwater table in Jhargram, West Bengal, India". **Sustainable Water Resources Management (Springer),** Scopus listed, Volume 1-12 (https://doi.org/10.1007/s40899-018-0294-9).
11. **Kayet, N**., Pathak, K., Chakrabarty, A., &Sahoo, S. (**2016**). 'Spatial impact of land use/land covers change on surface temperature distribution in Saranda Forest, Jharkhand'. **Modeling Earth Systems and Environment (Springer)** Scopus listed, Volume 2(3), 1-10(https://doi.org/10.1007/s40808-016-0159-x)
12. Kayet**, N**., Pathak, K., Chakrabarty, A., & Sahoo, S. (**2016**). 'Urban heat island explored by co-relationship between land surface temperature vs multiple vegetation indices'. **Spatial Information Research (Springer)** Scopus listed**,** Volume 24(5), 515-529 (https://doi.org/10.1007/s41324-016-0049-3).
13. Shaik, I., Mohammad, S., Nagamani, P. V., Begum, S. K., **Kayet, N**., & Varaprasad, D. (**2021**). 'Assessment of chlorophyll-a retrieval algorithms over Kakinada and Yanam turbid coastal waters along east coast of India using Sentinel-3A OLCI and Sentinel-2A MSI sensors', **Remote Sensing Applications: Society and Environment (Elsevier),** Scopus, 100644, (https://doi.org/10.1016/j.rsase.2021.100644)
14. Shaik, I., Begum, S. K., Nagamani, P. V., & **Kayet, N. (2021**). 'Characterization and mapping of hematite ore mineral classes using hyperspectral remote sensing technique: a case study from Bailadilairon ore mining region'. **SN Applied Sciences (Springer)** Scopus listed**,** Volume 3(2), 1-13, (https://doi.org/10.1007/s42452-021-04213-3).
15. Sahoo, S., Dhar, A., **Kayet, N**., & Kar, A. (**2019**). 'Identification of water-stressed area based on the interrelationship of soil moisture and seasonal rice cultivation'. **Paddy and Water Environment (Springer),** Scopus & SCI listed, Impact Factor–1.51, Volume 18(1), 193-209,(https://doi.org/10.1007/s10333-019-00774-7).
16. Sahoo, S., Dhar, A., **Kayet, N**., & Kar, A. (**2017**). 'Detecting water stress scenario by land use/land covers changes in an agricultural command area'. **Spatial Information Research (Springer)** Scopus listed, Volume 25(1), 11-21, (https://doi.org/10.1007/s41324-016-0073-3).

Book Chapters

1. Kumar, S , **Kayet, N**., Pathak, K.(**2021**) 'A geospatial approach to analyse the stability of mine overburden dump over reclaimed land' Land Reclamation and Restoration Strategies for Sustainable Development (**Elsevier**), (Vol. 10, pp. 205-220) (https://app.elsa.pub/document/1b08c490-25)
2. **Kayet, N**. 'Forest Health Monitoring using Hyperspectral Remote Sensing Techniques (**2021**) , Spatial Modeling, Forest Resources Management (**Springer)** (pp. 239-257).), Cham.(https://doi.org/10.1007/978-3-030-56542-8_10).
3. Kayet, N. 'Forest Fire Risk Assessment for Effective Geoenvironmental Planning and Management using Geospatial Techniques'(**2021**), Spatial Modeling in Forest Resources Management(Springer), (pp. 239-257). Cham. (https://doi.org/10.1007/978-3-030-56542-8_12).
4. Mhaske, S., Kapoor, I., Pathak, K., & **Kayet**, N, Slope Stability Analysis of the Overburden Dump of Meghahatuburu Iron Ore Mines in Singhbhum Region of India (**2019**). International Field Exploration and Development Conference (**Springer)** (pp. 3591-3605)., Scopus listed (https://doi.org/10.1007/978-981-15-2485-1_328)

Conferences

1. **Kayet, N**., Pathak, K., Chakrabarty, A., &Sahoo, S. 'Hyperspectral Image Analysis for Iron Mineral Exploration and Spectral Unmixing Study in Kiriburu and Meghahataburu Mining Areas, West Singbhum, Jharkhand' **(2017),** 38th Asian Conference on Remote Sensing (**ACRS2017),** (http://www.proceedings.com/38328.html).
2. **Kayet, N**, A. Chakrabarty, 'Hyperspectral Imaging Techniques for Iron minerals Mapping in hilltop mining area' Geoinformatics for Environmental Issues and Management (**2017**) ", Dept. of Remote Sensing and GIS, Vidyasagar University – Midnaporein collaboration with **ISRS, Kolkata Chapter**.
3. **Kayet, N**, A. Chakrabarty "Hyperspectral Image processing for Forest types Mapping and forest health monitoring: A case study in the buffer zones of iron mining belts of Saranda forest, Jharkhand, India", (2016) **Journal of GeoPython** ,2016 (**Switzerland**), Volume 1, (1)11,-20 (http://2016.geopython.net).
4. S Mandal, **Kayet, N**, Chakrabarty, A "Morphometric analysis of Bhagirathi river in Murshidabad district, &west Bengal: using geospatial and statistical techniques" **(2016)** Central Ground Water Authority & Central Ground Water Board Eastern Region, Kolkata (http://cgwb.gov.in/Regions/ER/index.html).
5. **Kayet, N.**, & Pathak, "Remote Sensing Based Land Surface Temperature (LST) Mapping in SarandaForest, Jharkhand Using Landsat-7 TM/ETM+ Data", (**2015**), **ISPRS I**ndia Technical CommissionVIII Mid-Term Symposium I D-444 (https://www.isprs.org/proceedings/2015/2015-WG-IV-2/Default.aspx).

ROJECT WORK EXPERIENCES

1 Worked as Research associate (RA)/PDF in Indian Space Research Organization (ISRO) sponsored project, under the Department of Mining Engineering, Indian Institute of Technology, Kharagpur, (Sept, 2021 to till date).

2 Worked as Senior project officer (SPO) in Indian Space Research Organization (ISRO) sponsored project, Department of Mining Engineering, Indian Institute of Technology, Kharagpur, (April 2018 to Aug, 2021).
Project Title : Development of forest health monitoring model based on Hyperion Data for Geo-Environmental Impact management in the Iron Ore Mining Belts of Saranda forest, Jharkhand(FJR)

3 Worked as Project Assistant (PA) in Central Water Commission (CWC) sponsored project, School of Water Resources, Indian Institute of Technology, Kharagpur, (June 2016 to March2018).
Project Title: Morphological Studies of Rivers Mahanadi, Mahananda and Hooghly (RMAH)"

4 Worked as Project Assistant (PA) in Steel Authority of India Limited (SAIL) sponsored project, Department of Mining Engineering, Indian Institute of Technology, Kharagpur, (June 2014 to May 2016).
Project Title "Preparation of comprehensive CAT plan for the Saranda forest area fed by Karo and Koina river system with specific measures and cost structure for implementation" (TCSF)

TEACHING EXPERIENCES

1. Guest teacher (2015- 2018), Masters student classes, Specialization- Hyperspectral remote sensing
   Organization: Department of Remote Sensing and GIS, Vidyasagar University, West Bengal
2. B Tech, M. Tech partial and short term course classes (2015-2021), Specialization- Remote sensing
   Organization: Department of Mining Engineering, Indian Institute of Technology, Kharagpur

JOURNAL PEER REVIEWER

1. Total science environment
2. Geocarto international
3. Natural hazards
4. Fire Safety Journal
5. Journal of Applied Remote Sensing
6. Applied Geomatics
7. International Soil and Water Conservation Research

SKILS

1. Softwares : Handling Arc GIS, Erdas Imagine, ENVI, SNAP, PCI Geomantic, Global mapper, Q G.I.S ,Origin, SPSS, and Geo-studio softwares
2. Instrumental: Spectroradiometer, Air particle measuring 2.5, GPS, Stereoscopes. and Dumpy level,
3. Programming : Python, and R (Basic), Google earth engine

DEVELOPMENTL SKILLS

1. Project proposal writing for receiving research grant and project report, preparation.
2. Project management and handling detail software and data procurement procedure.
3. Working experience in organizing short term courses.
4. Knowledge in preparation of hand on exercise of Image processing and GIS software

TRAINING, & WORKSHOP

1. Two weeks training on Hyperspectral remote sensing applications (2018) organized by National Remote sensing center (NRSC), ISRO, Hyderabad (Offline).
2. One week International training on Earth observation data for forest and agriculture carbon modeling (2019) organized by Indian Institute of Technology Kharagpur(Offline)..
3. Three day training on Hyperspectral remote sensing (2021) organized by National Remote sensing center(NRSC), ISRO, Hyderabad,(Online)
4. Advanced Hyperspectral Data Analysis Software tool – AVHYAS (2021) organized by Space Applications Centre (SAC), ISRO, Ahmedabad.,(Online)
5. Forest Mapping and Monitoring with SAR Data (2020) organized by National Aeronautics and Space Administration, (NASA) (Online)
6. One day workshop under ISRO Outreach Programme for Eastern Region(2018) organized by RRSC, Kolkata

REFERENCES

1) Prof. Khanindra Pathak
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2) Dr. V.M. Chowdary
Scientist, Regional Remote Sensing Centre (RRSC), Delhi, INDIA E-mail: chowdary_isro@yahoo.com, Phone: +91-9474621160

3) Dr. C. P. Singh
Scientist, Space Applications Centre (ISRO), Ahmedabad, INDIA E-mail: cpsingh@sac.isro.gov.in, Phone: +91-9434754217

4) Prof. Anirban Dhar
Associate Professor, Department of Civil Engineering, IIT Kharagpur , Email: anirban@civil.iitkgp.ac.in, Phone: +91 - 3222 – 283432

DECLARATION

I, hereby, declare that the above furnished by me are true to the best of my knowledge and belief.

April 07 , 2022