POPAT SHIVAJI PAWAR

M.Tech. (Agril.Engg.), Ph.D. (Agricultural Engineering)

I am presently working as a Contractual Research Associate (Natural Resource Management) at ICAR-NAHEP-CAAST-CSDA, situated within College of Agricultural Engineering, Jawaharlal Nehru Krishi Vishwavidyalaya in Jabalpur, Madhya Pradesh, India.

Looking for a role that fits my skill set and experience.

With 5+ years of research experience and expertise in spatial data analysis, GIS, programming,software development, and statistical data analysis, I am deeply committed to delivering exceptional results that foster innovation and drive growth.

FIELDS OF INTEREST

- Precision Agriculture, Development of GIS and image processing tools and its application for Agricultural Research and Development
- Digital Farming, Climate Change Studies, statistical data analysis & modelling
- Dissemination of Spatial Data through Web GIS, Geographical Information Analysis
- Application of geospatial Data for Natural Resource Management
- Hyperspectral Data Analysis, Agriculture Drought Monitoring and Management

Contact Info

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💼 PROFESSIONAL EXPERIENCE

October 2020 to Present

Research Associate (Natural Resource Management)
ICAR-NAHEP-CAAST-CSDA, College of Agricultural Engineering, Jawaharlal Nehru Krishi Vishwa Vidyalaya,

📍 Jabalpur (M.P.)

- Performed spatial data analysis for natural resource management, GIS data cleaning and processing, digitization of Geo-spatial data, Integration of spatial and non-spatial data.
- Collecting and analysing agricultural field trial data involves using proximal remote sensing tools such as spectroradiometers, SPAD meters, Line Quantum Sensors, Nitrogen sensors, Thermal imagine sensor, Plant canopy analyzers etc.
- Combined field GPS surveying with climate data analysis to verify the accuracy of satellite-based spatial maps, enabling precise geospatial analysis for agricultural planning and crop management.
- Created user-friendly web GIS applications that enable organizations to explore complex geospatial data with ease and make informed decisions.
- Employed Google Earth Engine Platform in conjunction with R and Python programming to access and process big geospatial data for natural resource management.
- Actively contributed to the planning and execution of skill development training programs and also served as a lecturer to enhance awareness and build capacity for students and faculty members across India as part of NAHEP-CAAST.
- Prepared informative training manuals on Remote Sensing & GIS techniques, progress reports and digital content to promote the use of spatial data in agriculture.

🔖 RESEARCH EXPERIENCE:

Jan' 23 | Present

Development of R Programming pipeline for processing and analysing Hyperspectral Data from Agricultural Field Trials
(Supervisor: Dr. R. K. Nema, PI, ICAR-NAHEP-CAAST-CSDA)

- In this work, R programming pipeline prepared for user-friendly processing, analysis,and visualization of spectroradiometer-collected spectral information of field crops.
- The developed R code efficiently handles large hyperspectral datasets, enabling import, preprocessing, and application of techniques like continuum removal and normalized ratio indices,and interactive visualization of results using the plotting tools.

SKILLS

Highly skilled in using R and Python for data science and analytics.

Experienced in statistical analysis, ML, Deep learning using AI libraries such as tensorflow, keras and Segment Anything Model using python and R programming

Drone images analysis using R and Python programming

Highly skilled in QGIS, ArcGIS, SNAP, ERDAS Imagine software

Cloud-based processing of spatial data using R and Python

Strong experience with GIS application development using R programming, leaflet and Shiny web framework

Hyperspectral data analysis using R and Python programming

Jul' 22 | Dec'22	**Assessment of spatio-temporal vegetation dynamics and agricultural drought using MODIS dataset for Madhya Pradesh state** (Supervisor: Dr. R. K. Nema, PI, ICAR-NAHEP-CAAST-CSDA) • In this work, the vegetation dynamics and agricultural drought pattern over the Madhya Pradesh state, India was analysed during 2001-2021 by VCI, TCI and VHI derived from Moderate Resolution Imaging Spectro-radiometer (MODIS) Terra satellite data.

FIELDimageR.Extra
GitHub

Crop Phenological Information based on Satellite Data for Jabalpur District, Madhya Pradesh
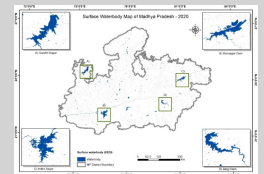(Supervisor: Dr. R. K. Nema, PI, ICAR-NAHEP-CAAST-CSDA)
Jan' 22
|
Jun'22

• The 16 day composite EVI index product of MODIS imagery at 250m spatial resolution (MOD13Q1) for the period 2001 to 2021 was accessed through NASA Land Processes Distributed Active Archive Center (LP DAAC) and processed using R software.

• The R package "Crop Phenology" was used to compute 15 Phenological metrics from RasterStack.

Monitoring the changes of surface water bodies during 2014-2020 over the Madhya Pradesh state using Landsat-8OLI data and Google Earth Engine
(Supervisor: Dr. R. K. Nema, PI, ICAR-NAHEP-CAAST-CSDA)
Jul'21
|
Dec'21

• Landsat 8 OLI imagery (2014-2020) from GEE database were used to monitor changes of surface water extent in the Madhya Pradesh state from 2014 to 2020.

• Used the combination of three indexes (EVI, NDVI, and mNDWI) to extract surface water areas.

• Calculated the annual area of the maximum, permanent, seasonal, and average surface water from 2014 to 2020.

• Developed web application (MP SWB (2020)) to visualized surface waterbody and its area distribution over the Madhya Pradesh . App link-<https://pspawar71.shinyapps.io/my_app/


MP SWB Shiny App

Spatiotemporal Dynamic Analysis of Potential Evapotranspiration over the Madhya Pradesh Based on MOD16 from 2000 to 2020.
(Supervisor: Dr. R. K. Nema, PI, ICAR-NAHEP-CAAST-CSDA)
Apr'21
|
Jun'21

• The MODIS Terra MOD16A2GF 8-day composite potential evapotranspiration dataset (500m spatial resolution) from the year 2000 to 2020 for the Madhya Pradesh state was downloaded and processed using MODIStsp R package.

• The Mann Kendall trend analysis of yearly and seasonal potential evapotranspiration raster time series (2000-2020) was carried out using "Kendall" R package.

• Developed web application (MP ETp) to visualized spatio-temporal variation of Potential Evapotranspiration. App link- https://pspawar71.shinyapps.io/MP_ETp/
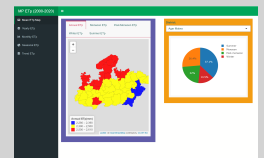

MP ETp Shiny App

MP Rain (1901-2019): An interactive web app for visualization of long term (1901-2019) spatiotemporal variability of rainfall and drought over the Madhya Pradesh state
(Supervisor: Dr. R. K. Nema, PI, ICAR-NAHEP-CAAST-CSDA)
Jan'21
|
Mar'21

• In this application, a 119 years (1901-2019) publicly available IMD daily grid (0.25 x 0.25 degree) rainfall data (Pai et al. 2014) are used for interactively visualizing the spatial and temporal variability of rainfall, rainy days, drought and dry/wet spell at district level for the Madhya Pradesh state.

• The web app is developed using R software and "Shiny" web framework.

• App link: https://pspawar71.shinyapps.io/Myapp/
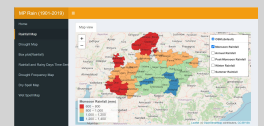
MP Rain Shiny App

Land use land cover classification using support vector machine classifier using R software
(Supervisor: Dr. S.K. Sharma, Co-PI, NAHEP-CAAST-CSDA)
Nov'20
|
Dec'20

• Supervised classification of Sentinel2 imagery.

🖥 TEACHING EXPERIENCE

September 2017 to October 2020

Teaching Assistant (Contractual Position)
Shramshakti College of Agricultural Engineering and Technology,
📍 Maldad, Tal. Sangamner, Dist.Ahmednagar (M.S.)
• Teaching, Laboratory Development, Project Guide,In-plant Training Coordinator, Farm development

🎓 EDUCATION

2017

Ph.D. in Agricultural Engineering (Soil and Water Conservation Engineering)
Vasantrao Naik Marathwada Krishi Vidyapeeth   📍 Parbhani, Maharashtra, India

Thesis: Studies on effect of different mulches on soil physical properties, moisture conservation and yield of drip irrigated watermelon

2012

M.Tech. in Agricultural Engineering (Soil and Water Conservation Engineering)
Dr. Panjabrao Deshmukh Krishi Vidyapeeth   📍 Akola, Maharashtra, India

Thesis: Effect of embankment height on evaporation losses from dugout type farm pond

2010

B. Tech. in Agricultural Engineering
Mahatma Phule Krishi Vidyapeeth,   📍 Rahuri, Maharashtra, India

📄 PUBLICATIONS

2023

FIELDimageR.Extra: Advancing user experience and computational efficiency for analysis of orthomosaic from agricultural field trials.
The Plant Phenome Journal,6,e20083. https://doi.org/10.1002/ppj2.20083.
Pawar, P. S and Matias, F. I.

2021

Wheat Crop Acreage Estimation Based on Remote Sensing and GIS in Jabalpur (Madhya Pradesh, India).
Asian Journal of Agricultural Extension, Economics & Sociology 39(2): 88-94.
Rawat, U, Yadav A, **Pawar, P. S**, Rajput, A, Vasht, D and S. Nema.

2021

Hydrological Modelling of Banjar River Watershed using HEC-HMS.
Chem. Sci. Rev. Lett, 9 (33), 1-5.
Rajput, A, Rawat U, Yadav, A, **Pawar, P.S**, Vasht, D.

2020

Long Term Trend Analysis of Rainfall, Rainy Days and Drought for Sindh River Basin, Madhya Pradesh, India.
Int.J.Curr.Microbiol.App.Sci. 9(12): 2738-2749.
Pawar, P. S., Rawat, U., Yadav A., Rajput, A., Vasht, D. and Nema, S.

2019

Effect of different mulches on soil moisture conservation and yield of drip irrigated watermelon.
Indian Journal of Soil Conservation, 47(2): 134-142.
Pawar, P. S., Kadale, A. S. and Gadade, G.D.

2019

Effect of various mulches and irrigation levels on root zone temperature, growth and fruit yield of watermelon (citrulluslanatus t.) cv. Kiran.
Int.J.Curr.Microbiol.App.Sci.8(10): 2566-2576.
Pawar, P. S., Kadale, A. S. and Gadade, G.D.

2019 — **Dry and wet spell probability by Markov chain model for Agricultural Planning at Parbhani.**
MAUSAM, 70(3):589-592.
Pawar, P. S., Waikar, A. U. and Khodke, U. M.

2019 — **Effect of conservation techniques on soil moisture, growth characteristics and yield of cotton under rainfed conditions.**
Green Farming, Vol.(5) 647-650.
Sathe, M. P., Taley, S. M., **Pawar, P. S.** and Lad, S. A.

2017 — **Spatiotemporal Variability of drought in Marathwada.**
Proceeding of International conference on technological advances in climate- smart Agriculture and sustainability. 131-134.
Waikar, A. U., Khodke, U. M. and **Pawar, P. S.**

2016 — **Probability analysis of annual one day maximum rainfall for planning of soil and water conservation structures at Parbhani.**
Multilogic in science. 6(17), 151-157.
Pawar, P. S., Kadam, A. S. and Waikar, A. U.

2016 — **Mean monthly pan evaporation estimation using regression model.**
Progressive Research- An international Journal. 11(8), 5585-5588.
Pawar, P. S., Waikar, A. U. and Kale, A.M.

2016 — **Quantification of storage loss from dugout type farm pond in clayey region of Vidharbha.**
Advances in Life Sciences, 5(23). 11046-11050.
Pawar, P. S. and Waikar, A. U.

🔖 NATIONAL AND INTERNATIONAL CONFERENCE:

2017 — **Participated in International Conference on Technological Advances in Climate-smart Agriculture and Sustainability-16-18.**
📍 Nanded (Maharashtra) India.

2017 — **Participated and presented research paper (poster) in International Seminar Global Climate Change: Implications for Agriculture and Water Sectors.**
📍 WALMI,Aurangabad (Maharashtra) India.

2016 — **Participated in National conference on Innovative and Current Advances in Agriculture and Allied Sciences.**
📍 Meerut (U.P.) India.

🖥 TRAINING AND COURSES

2023 — **21 Day Hands-on Training on Artificial Intelligence in Agriculture**
NAHEP-CAAST-CSDA, College of Agricultural Engineering, JNKVV, Jabalpur

2021 — **21 Day Hands-on Training on Remote Sensing and GIS Using QGIS**
NAHEP-CAAST-CSDA, College of Agricultural Engineering, JNKVV, Jabalpur

2021 — **One week Hands-on Training on Fundamentals of Artificial Intelligence and Machine Learning**
NAHEP-CAAST-CSDA, College of Agricultural Engineering, JNKVV, Jabalpur

2020 — **One week Hands-on Training on Image Processing using Python Programming**
NAHEP-CAAST-CSDA, College of Agricultural Engineering, JNKVV, Jabalpur

2008 — **Certificate course on C Programming**
BITWISE Computer Institute, Anant Chamber, Ashokstambh, Nashik

2008	**Certificate course on C++ Programming**
	BITWISE Computer Institute, Anant Chamber, Ashokstambh, Nashik
2010	**Certification course on AutoCAD**
	BITWISE Computer Institute, Anant Chamber, Ashokstambh, Nashik
2009	**One month professional training in Central Institute of Post-Harvest Engineering and Technology**
	Ludhiana, Panjab.
2008	**One month professional training on operation and maintenance of KAMCO Power Tiller**
	Kerala Agro Machinery Corporation Ltd., Kerala.

📋 MEMBERSHIP

Indian Society of Agricultural Engineers

📇 REFERENCES

Dr. R. K. Nema, Principal investigator,
ICAR-NAHEP-CAAST-CSDA,
CAE, JNKVV, Jabalpur
Mob. No. +91 9407001170
Email: rknema1977@gmail.com

Dr. S. K. Sharma, Professor, Co-PI (Research)
ICAR-NAHEP-CAAST-CSDA,
CAE, JNKVV, Jabalpur
Mob No. +91 9425387567
Email:sharmashailesh501@gmail.com

Filipe Matias, Lead in Phenomics & Enviromics at Syngenta LATAM
Uberlândia, Minas Gerais, Brazil,
Email:filipematias23@gmail.com
Working Relationship: Filipe Matias and I have been working together on the development of the FIELDimageR.Extra tool. This tool aims to provide a user-friendly solution for analyzing orthomosaic images obtained from Agricultural Field Trials.
GitHub link: https://github.com/filipematias23/FIELDimageR.Extra

🔤 SPOKEN LANGUAGES

Marathi
Native

Hindi
Fluent

English
Professional working proficiency

PERSONAL DETAILS
• Marital Status: Married
• Birthday: June 24, 1988
• Gender: Male
• Nationality: India
• Permanent address: At/ Post- Pimparkhed, Tal-Dindori, Dist- Nashik- 422202 (M.S.), India.