

# Dr. Pangambam Sendash Singh

Postdoctoral Researcher at Institut Català d'Arqueologia Clàssica, Tarragona, Spain

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## Educational Background

2022 Ph.D. in Computer Science

Banaras Hindu University, Varanasi

Thesis title: *Machine Learning Based Efficient Approaches for Improving the Performance of Multi-faceted Hyperspectral Imaging Applications*

2015 M.Sc. in Computer Science

Banaras Hindu University, Varanasi

2012 B.Sc. (Hons.) in Physics with Computer Science and Mathematics

D.M. College of Science (Manipur University), Imphal

## Academic Achievements

- State topper in Computer Science (97%) securing all Manipur 20<sup>th</sup> Position (Science Stream) in Higher Secondary Examination conducted by Council of Higher Secondary Education, Manipur in the year 2009.
- Awarded INSPIRE Scholarship for Higher Education by Department of Science and Technology, Govt (2009-2013).
- Recipient of (Late) N. Lakhi Devi Memorial Gold Medal for securing highest marks in Computer Science for D.M. College of Science, Imphal in B.Sc. Degree in the year 2012.
- Qualified GATE in Computer Science and Information Technology (2015).
- Qualified UGC-National Eligibility Test (NET) in Computer Science and Applications (June 2015).
- Awarded Junior Research Fellowship (December 2015) and subsequently Senior Research Fellowship by the University Grants Commission (UGC), New Delhi, India (2017-2022).

## Work Experience

Postdoctoral Researcher (November 2022 – Ongoing)

Institut Català d'Arqueologia Clàssica (ICAC), Tarragona, Spain

- Machine Learning based Mapping of Archaeological Heritage Sites from Multispectral Satellite Images.

## List of Publications

### • Papers published in International Journals:

1. Singh, Pangambam Sendash & Subbiah Karthikeyan (2022). "Salient object detection in hyperspectral images using deep background reconstruction based anomaly detection." *Remote Sensing Letters*, 13(2), 184–195. Taylor & Francis. doi: 10.1080/2150704X.2021.2005270 (SCIE IF: 2.369)
2. Singh, Pangambam Sendash & Subbiah Karthikeyan (2021). "Enhanced classification of remotely sensed hyperspectral images through efficient band selection using autoencoders and genetic algorithm." *Neural Computing and Applications*, 34, 21539–21550. Springer. doi: 10.1007/s00521-021-06121-4 (SCIE IF: 5.102)
3. Singh, Pangambam Sendash, Vijendra Pratap Singh, Manish Kumar Pandey & Subbiah Karthikeyan (2021). "Enhanced classification of hyperspectral images using improvised oversampling and undersampling techniques." *International Journal of Information Technology*. Springer. doi: 10.1007/s41870-021-00676-0 (Scopus indexed)
4. Singh, Pangambam Sendash, Vijendra Pratap Singh, Manish Kumar Pandey & Subbiah Karthikeyan (2020). "Local Binary Ensemble based Self-training for Semi-supervised Classification of Hyperspectral Remote Sensing Images." *Computación y Sistemas*, 24(2), 497–509. doi: 10.13053/CyS-24-2-3374 (Scopus indexed)
5. Singh, Vijendra Pratap, Manish Kumar Pandey, Singh, Pangambam Sendash & Subbiah Karthikeyan (2020). "An LSTM Based Time Series Forecasting Framework for Web Services Recommendation." *Computación y Sistemas* 24(2), 687–702. doi: 10.13053/CyS-24-2-3402 (Scopus indexed)

## • Papers published in International Conference Proceedings:

1. Singh, Pangambam Sendash, Vijendra Pratap Singh, Manish Kumar Pandey & Subbiah Karthikeyan (2020). "One-class Classifier Ensemble based Enhanced Semisupervised Classification of Hyperspectral Remote Sensing Images." *International Conference on Emerging Smart Computing and Informatics (ESCI), 2020*, (pp. 22–27). IEEE Xplore., doi: 10.1109/ESCI48226.2020.9167650.
2. Singh, Vijendra Pratap, Manish Kumar Pandey, Pangambam Sendash Singh & Subbiah Karthikeyan. "Neural Net Time Series Forecasting Framework for Time-Aware Web Services Recommendation." *Third International Conference on Computing and Network Communications (CoCoNet'19)*, Procedia Computer Science 171, (2020): 1313–22. doi: 10.1016/j.procs.2020.04.140
3. Singh, Vijendra Pratap, Manish Kumar Pandey, Pangambam Sendash Singh & Subbiah Karthikeyan. "An Econometric Time Series Forecasting Framework for Web Services Recommendation." *International Conference on Computational Intelligence and Data Science ICCIDS 2019*, Procedia Computer Science 167, no. ICCIDS 2019 (2020): 1615–25. doi: 10.1016/j.procs.2020.03.372

## • Book Chapter:

1. Singh, Vijendra Pratap, Pandey Manish Kumar, Singh, Pangambam Sendash & Karthikeyan Subbiah. "An Empirical Mode Decomposition (EMD) Enabled Long Short Term Memory (LSTM) Based Time Series Forecasting Framework for Web Services Recommendation." *Frontiers in Artificial Intelligence and Applications, Vol: 320 Fuzzy Systems and Data Mining V* (2019), 715–723. doi: 10.3233/FAIA190241

## Research Area

- Machine Learning
- Deep Learning
- Hyperspectral Data Analysis

## Professional Activities

- Peer reviewer of IEEE Transactions on Geoscience and Remote Sensing
- Peer reviewer of IEEE Geoscience and Remote Sensing Letters
- Peer reviewer of International Journal of Remote Sensing
- Peer reviewer of Machines

## Technical Skills

- **Programming Languages:** C, MATLAB, Python (Currently exploring)
- **Document Preparation System:** Latex, MS Word
- **Machine Learning Tools/Simulators:** Weka
- **Application Software:** MS Office, Adobe Photoshop
- **Web Design Languages:** HTML, CSS

## Personal Details

**Father's name:** Pangambam Ibomcha Singh  
**Mother's name:** Pangambam Sumobala Devi  
**Date of birth:** 01/02/1992  
**Permanent address:** Yairipok Poiroukhongjin Kaina Road  
P.O. Thoubal, Imphal East District  
Manipur - 795138, India.  
**Nationality:** Indian  
**Linguistic ability:** Manipuri, Hindi, English  
**Hobbies:** Singing, playing musical instruments and writing poems.

## Referees

**Dr. Subbiah Karthikeyan**  
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**Dr. Takhellambam Sonamani**  
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