Pangambam Sendash Singh

Postdoctoral Fellow at Institut Català d'Arqueologia Clàssica, Tarragona (Spain)

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Educational Background

2022   **Doctor of Philosophy (Computer Science)**

Banaras Hindu University, Varanasi

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

2015   **Master of Science (Computer Science)**

Banaras Hindu University, Varanasi

2012   **Bachelor of Science (Physics (Hons.) with Computer Science and Mathematics)**

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

Academic Achievements

- **State subject topper in Computer Science (97%)** securing **all Manipur 20th Position** in Higher Secondary Examination (Science) conducted by Council of Higher Secondary Education, Manipur in the year 2009.
- Awarded **INSPIRE Scholarship for Higher Education** by Department of Science and Technology, GoI (2009-2013).
- Awarded **State Merit Scholarship** by Department of Education (S), Government of Manipur (2009-2010).
- 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 (NET-JRF)** in December 2015 and subsequently **Senior Research Fellowship** by the University Grants Commission (UGC), New Delhi, India.

Work Experience

Postdoctoral Research Fellow (November 1, 2022 – Ongoing)

Institut Català d'Arqueologia Clàssica (ICAC), Universitat Rovira i Virgili, Tarragona (Spain)

- Project: Mapping Archaeological Heritage in South Asia (MAHSA)
- Roles: Investigating novel machine learning algorithms to automatically detect archaeological heritage sites using data obtained from multiple satellite imageries.

List of Publications

- **Papers published in peer-reviewed indexed journals:**

  Main publications:

  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 (**SCI Indexed, IF: 2.514**)

  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 (**SCI Indexed, IF: 5.130**)

  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, IF: NA**)

  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, IF: NA**)

  <u>Collaborations:</u>

  5. Nath, Abhigyan, Rathore, Sudama, & **Singh, Pangambam Sendash** (2023). "Exploiting ensemble learning and negative sample space for predicting extracellular matrix receptor interactions." *Mathematical Biology and Bioinformatics*, 18(1), 113–127. doi: 10.17537/2023.18.113 (**Scopus indexed, IF: NA**)

6. 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, IF: NA**)

- **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

- Data Mining
- Machine Learning
- Deep Learning

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
- Peer reviewer of Neural Processing Letters
- Peer reviewer of SN Computer Science

Technical Skills

- **Programming Languages:** C, MATLAB, Python (Currently exploring)
- **Document Preparation Systems:** 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

Prof. S. Karthikeyan
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