

Rituraj Singh

Curriculum Vitae



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<i>Email</i>	riturajsingh.infotech@gmail.com
<i>Google Scholar</i>	Rituraj Singh
<i>Website</i>	https://devrituraj.github.io/
<i>Languages</i>	English (fluent), Maithili (native), Hindi (fluent), Bengali (beginner), French (beginner).

RESEARCH AREAS

My PhD research focus was on developing algorithms for crowdsourcing applications: to propose a formal model for complex tasks and to develop human-in-loop algorithms by applying probabilistic based techniques and latent variable models. I am passionate to apply machine learning methods in other domains like healthcare, sensor data, natural language processing, etc. Previously, I worked on anomaly detection applied on sensor data and on detection of diseases based on data obtained using wearables. My area of interests are Machine Learning, Bayesian Learning, Deep Learning, Human-in-the-loop AI, Crowdsourcing, Workflows, and in broad Artificial Intelligence.

EDUCATION

PhD in Computer Science & Engineering 2018-2021

• *INRIA • IRISA • University de Rennes 1, France*

- Co-advised by [Dr. Loïc Hélouët](#) and [Dr. Zoltán Miklós](#)
- Thesis: [Data Centric Workflows for Crowdsourcing Applications](#).

M.Tech in Computer Science & Engineering 2013-2015

• *Indian Institute of Technology, Patna, India.*

- Advised by [Dr. Ashok Singh Sairam](#)
- Thesis: Push based User Selection in Crowdsensing.

B.Tech. in Information Technology 2008-2012

Rajasthan Technical University, Rajasthan, India.

WORK EXPERIENCE

Researcher 2015-2017

TCS Research and Innovation Labs, Kolkata, India

- Research on applying machine learning models on sensor and wearable healthcare data. The work led to several publications and patents.

Internship Summer 2014

TCS Research and Innovation Labs, Kolkata, India

- Project on anomaly detection using unsupervised learning in Smart meter sensor data.

RESEARCH INTERESTS

Machine Learning, Bayesian Learning, Deep Learning, Human-in-the-loop AI, Crowdsourcing, Workflows, and in broad Artificial Intelligence.

PATENTS

5. Soma Bandyopadhyay, Arijit Ukil, Rituraj Singh, Puri Chetanya, Arpan Pal, CA Murthy , “[Anomaly detection by self-learning of sensor signals](#)”, Patent No. : US 10,743,821 B2
 4. Sahu Ishan, Ayan Mukherjee, Arijit Ukil, Soma Bandyopadhyay, Puri Chetanya, Rituraj Singh, Arpan Pal, Rohan Banerjee , “[Method and system for joint selection of a feature subset-classifier pair for a classification task](#)”, Pub. No. : US 2019/0361919 A1
 3. Soma Bandyopadhyay, Arijit Ukil, Puri Chetanya, Rituraj Singh, Arpan Pal, C A Murthy, “[Method and system for pattern recognition in a signal using morphology aware symbolic representation](#)”, Pub. No. : US 2019/0278971 A1
 2. Soma Bandyopadhyay, Arijit Ukil, Puri Chetanya, Rituraj Singh, Arpan Pal, C A Murthy, “[Systems and methods for detecting anomaly in a cardiovascular signal using hierarchical extremas and repetitions](#)”, Pub. No. : US 2019/0200935 A1
 1. Arijit Ukil, Soma Bandyopadhyay, Puri Chetanya, Rituraj Singh, Arpan Pal, “[Generalized one-class support vector machines with jointly optimized hyperparameters](#)”, Pub. No. : US 2019/0050690 A1
- Note: For complete list, please visit [here](#).

RESEARCH PUBLICATIONS

7. Rituraj Singh, Loïc Hérouët, Zoltán Miklós, “[Reducing the Cost of Aggregation in Crowdsourcing](#)”, Transactions on Large-Scale Data and Knowledge-Centered Systems. (Accepted).
 6. Loïc Hérouët, Zoltan Miklos, Rituraj Singh, “[Cost and Quality Assurance in Crowdsourcing Workflows](#)”, PetriNets 2021. (Authors listed in alphabetical order).
 5. Rituraj Singh, Loïc Hérouët, Zoltán Miklós, “[Reducing the Cost of Aggregation in Crowdsourcing](#)”, International Conference on Web Services (ICWS 2020).
 4. Pierre Bourhis, Loïc Hérouët, Zoltán Miklós, Rituraj Singh, “[Data Centric Workflows for Crowdsourcing](#)”, 41st International Conference on Application and Theory of Petri Nets and Concurrency, (PetriNets) 2020. (Authors listed in alphabetical order).
 3. Arijit Ukil, Ishan Sahu, Chetanya Puri, Ayan Mukherjee, Rituraj Singh, Soma Bandyopadhyay, Arpan Pal, “[AutoModeling: Integrated Approach for Automated Model Generation by Ensemble Selection of Feature Subset and Classifier](#)”, International Joint Conference on Neural Networks (IJCNN) 2019
 2. Arijit Ukil, Soma Bandyopadhyay, Chetanya Puri, Rituraj Singh, Arpan Pal, “[Effective Noise Removal and Unified Model of Hybrid Feature Space Optimization for Automated Cardiac Anomaly Detection Using Phonocardiogram Signals](#)”, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2018.
 1. Soma Bandyopadhyay, Arijit Ukil, Rituraj Singh, Chetanya Puri, Arpan Pal, CA Murthy, “[Pattern Analysis in Physiological Pulsatile Signals: An Aid to Personalized Healthcare](#)” 40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC) 2018
- Note: For complete list, please visit [here](#).

ACHIEVEMENTS

- Fellowship - [ANR Headwork Project](#) (2018).
- Scholarship - GATE Masters Scholarship (2013-2015).
- Received “TCS i-Citation Award” (2016 & 2017).
- [Part of team - Winner Physionet Challenge](#) (2017).
- All India Rank 440 (out of 224160 candidates) in Graduate Aptitude Test in Engineering (GATE) 2013.

TEACHING EXPERIENCE

Travaux Pratiques¹ for Artificial Intelligence - Topics on Deep Learning

Spring 2021

- Graduate level introduction to Deep learning (Fully Connected Network, CNN, RNN, LSTM) using Tensorflow, Keras at ESIR — University of Rennes 1.

Travaux Pratiques Data Mining Course

Spring 2019,2018

- Graduate level course on data mining using numpy, pandas, scipy, sklearn libraries at ESIR — University of Rennes 1.

Teaching Assistant for JAVA programming language

Fall 2014

- Undergraduate level course on JAVA programming - IIT Patna

Teaching Assistant for Shell programming and C programming language

Spring 2013

- Undergraduate level course on Shell programming and C language - IIT Patna.

COMPUTER SKILLS

- Programming languages: Python, Matlab, Java, C, C++, Android.
- Frameworks: Pytorch, Tensorflow, Sklearn
- Database Systems: MySQL, SPARQL.
- Scientific: LATEX, Git.

PROJECTS

- Data Centric Workflows for Complex Crowdsourcing Applications.
- Anomaly detection and its impact on disease classification on Bio-medical data.
- Machine Learning mini-projects on image classification, sentiment analysis & NLP.
- Crowdsensing using Mobile Phone.

Note: For further details on my research, please visit the [publications](#) page.

EXTRA CURRICULUM ACTIVITIES

- Sports: Badminton, video-games, hiking.
- Hobbies: traveling, reading, movies, playing keyboard.

REFERENCES

1. [Dr. Loïc Héluët](#), Chargé de recherche, SUMO Team, INRIA, Rennes, France.
2. [Dr. Zoltán Miklós](#), Assistant Professor, Université de Rennes 1, DRUID Team, IRISA, Rennes, France.
3. [Dr. Ashok Singh Sairam](#), Associate Professor, Indian Institute of Technology, Guwahati, India.

¹Equivalent to Teaching Assistant