

**Special Session on  
Computational Intelligence for Imbalanced Classification  
at  
21<sup>st</sup> International Conference on Intelligent Systems Design and Its Applications  
(ISDA)  
on  
World Wide Web  
December 13-15, 2021**

<http://www.mirlabs.net/isda21/>

### **Objectives and Scope**

**Imbalanced classification** is one of the most important tasks in machine learning, which has attracted much attention from both academic and industrial communities. Imbalanced classification has a very wide range of real-world applications, most of which are closely related to our daily life, such as medical diagnosis, intrusion detection, anomaly detection, and credit card fraud detection. Imbalanced data exhibits a skewed distribution between its classes. If the class imbalance issue is not well-addressed, classifiers are likely to ignore the class of interest which is constituted by a few instances.

**Computational intelligence** is a subfield of artificial intelligence, which covers three research branches, including evolutionary computation, fuzzy sets, and artificial neural networks. Computational intelligence techniques have been applied and achieved great contributions to imbalanced classification. In the big data era, the amount of data is growing very rapidly, either increasing in a number of features or instances. This brings further difficulty in constructing effective classifiers when learning from imbalanced data but in return enriches new opportunities.

**The aim of this special session** is to join the contemporary use of computational intelligence techniques for imbalanced classification. This special session attempts to bring together some of leading experts or researchers from different branches in computational intelligence and offers a forum for them to present their latest research, discuss open questions as well as current advances in imbalanced classification. The session welcomes studies and contributions that introduce novel methods based on different computational intelligence paradigms to imbalanced classification and its applications.

## **Topics of interest include but are not limited to:**

Authors are invited to submit their original and unpublished work to this special session, which is concerned with imbalanced data and approaches based on computational intelligence techniques under the umbrella of imbalanced classification.

Topics of interest include but are not limited to:

- Evolutionary computation (e.g., Genetic Algorithms, Genetic Programming and Particle Swarm Optimization, etc.) for imbalanced classification
- Evolutionary computation with sampling methods (including undersampling, oversampling and hybrid sampling) for imbalanced classification
- Evolutionary computation with cost-sensitive learning for imbalanced classification
- Fuzzy sets, Rough sets, Granular computing for imbalanced classification
- Fuzzy rule-based classification systems for imbalanced classification
- Neural networks for imbalanced classification
- Deep learning for imbalanced classification
- Sampling methods for imbalanced classification
- Instance selection for large-scale imbalanced data
- Cost-sensitive learning for imbalanced classification
- Active learning for imbalanced classification
- Improve interpretability of over-complicated models for imbalanced classification
- Feature selection/construction/extraction/ranking/analysis for imbalanced classification with high-dimensional data
- Real-world applications of imbalanced classification, e.g., medical data analysis, fault detection, anomaly detection, software defect prediction, and text mining.

## **Paper Publications**

- Proceedings will be published in Lecture Notes in Networks and Systems, Springer (Indexed in SCOPUS, INSPEC, WTI Frankfurt eG, zbMATH, SCImago)  
<https://www.springer.com/series/15179>
- Papers maximum length is 10 pages
- Papers must be formatted according to Springer format (Latex/word) available at: <https://www.springer.com/de/authors-editors/book-authors-editors/manuscript-preparation/5636#c3324>

## **Important Dates**

Paper submission due: September 30, 2021

Notification of paper acceptance: October 31, 2021

Registration and Final manuscript due: November 15, 2021

Conference: December 13-15, 2021

**Special Session Chair**

- **Wenbin Pei**, Victoria University of Wellington, New Zealand
- **Bing Xue**, Victoria University of Wellington, New Zealand
- **Antonio J. Tallón-Ballesteros**, University of Huelva, Spain

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