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# Learning from Imbalanced Data Sets

- Offers a comprehensive review of imbalanced learning widely used worldwide in many real applications, such as fraud detection, disease diagnosis, etc
- Provides the user with the required background and software tools needed to deal with Imbalance data
- Presents the latest advances in the field of learning with imbalanced data, including Big Data applications and non-classical problems, such as semi-supervised learning, multilabel and multi instance learning, and ordinal classification and regression
- Includes case studies

This book provides a general and comprehensibleoverview of imbalanced learning. It contains a formal description of a problem, and focuses on its main features, and the most relevant proposed solutions. Additionally, it considersthe different scenarios in Data Science for which the imbalanced classification cancreate a real challenge.This book stresses the gap with standard classification tasks by reviewing the casestudies and ad-hoc performance metrics that are applied in this area. It also covers thedifferent approaches that have been traditionally applied to address the binaryskewed class distribution. Specifically, it reviews cost-sensitive learning, data-levelpreprocessing methods and algorithm-level solutions, taking also into account thoseensemble-learning solutions that embed any of the former alternatives. Furthermore, itfocuses on the extension of the problem for multi-class problems, where the formerclassical methods are no longer to be applied in a straightforward way. This book also focuses on the data intrinsic characteristics that are the main causeswhich, added to the uneven class distribution, truly hinders the performance ofclassification algorithms in this scenario. Then, some notes on data reduction areprovided in order to understand the advantages related to the use of this type of approaches. Finally this book introduces some novel areas of study that are gathering a deeper attentionon the imbalanced data issue.

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