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Impact learning: A learning method from feature's impact and competition

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ABSTRACT

Machine learning is the study of computer algorithms that can automatically improve based on data and experience. Machine learning algorithms build a model from sample data, called training data, to make predictions or judgments without being explicitly programmed to do so. A variety of well-known machine learning algorithms have been developed for use in the field of computer science to analyze data. This paper introduced a new machine learning algorithm called impact learning. Impact learning is a supervised learning algorithm that can be consolidated in both classification and regression problems. It can furthermore manifest its superiority in analyzing competitive data. This algorithm is remarkable for learning from the competitive situation and the competition comes from the effects of autonomous features. It is prepared by the impacts of the highlights from the intrinsic rate of natural increase (RNI). We, moreover, manifest the prevalence of impact learning over the conventional machine learning algorithm.

1. Introduction

Machine learning (ML) is a state-of-the-art approach that has shown promise in the areas of categorization and prediction. To improve demand estimates, we can use a variety of methods to examine historical data, including time series analysis, machine learning techniques, and deep learning models. As needed, ML ensures program consistency and adaptability. Machine learning, while not competitive, will continue to grow in the near future due to increasing data capital and greater need for personalized applications (e.g., the development of matrix multiplications) [1]. In addition to app growth, ML is also expected to change the general perspective of computer science. ML emphasizes creating a self-monitoring, self-diagnosing, and self-repairing system by shifting the focus from "how to program a machine" to "how to make it program itself". Both statistics and computer science can contribute to the evolution of ML as they develop and apply increasingly complex ideas that change the way people think [2]. In statistics and machine learning, extracting knowledge from data is an important endeavor. Many fields, including biomedicine [3], Business Analytics [4], Computational Optimization [5], Criminal Justice [6], Cybersecurity [7], Policy Making [8], Process Monitoring [9] rely on it. Mathematical Optimization plays a vital role in building such models.

Classification and Regression Modern approaches based on recursive partitioning are trees. Those models are theoretically simple and exhibit exceptional learning performance. Nevertheless, those are very computationally expensive. There are methods and packages to instruct those models in common programming languages such as Python and R. Those models are desirable not only in terms of their interoperability but also because of their rule-based nature [10]. Those models are too attractive for a variety of applications, such as credit scoring for lending. Those models used a dataset of individuals that includes demographic and financial predictors, among others, and models use this information to predict whether consumers will be good or bad payers.

Each machine learning algorithm has its own application [11]. An approach may be optimal for a particular dataset but not for others. In real life, we work with directed data such as time periods (e.g., day, week, month, etc.), orientation, and rotation. Special algorithms are required to manage directed data. A few researchers, including [12], have developed a non-probabilistic model for directional data. Kowsher

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