INTRODUCTION

With the rapid development of social networks and microblogging websites. Microblogging websites have become one of the largest web destinations for people to express their thoughts, opinions, and attitudes about different topics [1], [2]. Twitter is a widely used microblogging platform and social networking service that generates a vast amount of information.

In recent years, researchers preferably made the use of social data for the sentiment analysis of people's opinions on a product, topic, or event. Sentiment analysis, also known as opinion mining, is an important natural language processing task. This process determines the sentiment orientation of a text as positive, negative, or neutral.

Twitter sentiment analysis is currently a popular topic for research. Such analysis is useful because it gathers and classifies public opinion by analyzing big social data.

However, Twitter data have certain characteristics that cause difficulty in conducting sentiment analysis in contrast to analyzing other types of data. Tweets are restricted to 140 characters, written in informal English, contain irregular expressions, and contain several abbreviations and slang words. To address these problems, researchers have conducted studies focusing on sentiment analysis of tweets [5]. Twitter sentiment analysis approaches can be generally categorized into two main approaches, the machine learning approach, and a lexicon-based approach.

In this study, we use machine learning techniques to tackle twitter sentiment analysis. Most classification algorithms are focused on predicting nominal class data labels. However, a rule for predicting categories or labels on an ordinal scale involves many pattern recognition issues. This type of problem, known as ordinal classification or ordinal regression.

Recently, ordinal regression has received considerable attention. Ordinal regression issues in many Fields of research are very common and have often been regarded as standard nominal problems that can lead to non-optimal solutions.

In fact, Ordinal regression problems with some similarities and differences can be said to be between classification and regression. Medical research, age estimation, brain-computer interface, face recognition, facial beauty evaluation, image classification, social sciences, text classification, and more are some of the Fields where ordinal regression is found.

Some studies suggest using machine learning techniques to solve regression problems to improve the sentiment analysis classification of Twitter data performance and predict new results. The main advantage of this method is the achievement of improved results.

The current study mainly focuses on the sentiment analysis of Twitter data (tweets) using different machine learning algorithms to deal with ordinal regression problems. In this paper, we propose an approach including pre-processing tweets, feature extraction methods, and constructing a scoring and balancing system, then using different techniques of machine learning to classify tweets under several classes.