Chapter 66
Opinion Mining for Instructor Evaluations at the Autonomous University of Ciudad Juarez

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ABSTRACT

The Autonomous University of Ciudad Juárez performs an instructor evaluation each semester to find strengths, weaknesses, and areas of opportunity during the teaching process. In this chapter, the authors show how opinion mining can be useful for labeling student comments as positives and negatives. For this purpose, a database was created using real opinions obtained from five professors of the UACJ over the last four years, covering a total of 20 subjects. Natural language processing techniques were used on the database to normalize its data. Experimental results using 1-NN and Bagging classifiers shows that it is possible to automatically label positive and negative comments with an accuracy of 80.13%.

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INTRODUCTION

Opinions are central activities for almost all human beings. When we need to make important decisions, it is essential to know the view of others; therefore, opinions are a valuable source of information. The sentiments analysis or opinion mining is an area that automatically classifies sentiments expressed by a person about a given object, as positive, negative, or neutral (Cortizo, 2019). Opinion mining is used by companies to understand the perceptions that customers have about their products or services and identify areas of opportunity or improve the marketing strategies used (Huddy, 2017).

Teacher evaluations are carried out by the Autonomous University of Ciudad Juárez (UACJ) each semester as a method by which the written opinion of students is recorded to identify strengths, weaknesses, and areas of opportunity in the performance of teachers (Universidad Autonoma de Ciudad Juarez, 2019).

During the period of evaluation, the teaching evaluation office makes available to students a platform in which, in addition to other metrics, two boxes appear where they can freely write positive and negative comments about their teachers during the semester in progress. In this process, a student might mistakenly write negative comments in the positive box and vice versa, as well as a combination of both. It causes the teacher evaluation to not provide easy feedback to teachers as the positive and negative comments are mixed.

During the evaluation process, the student is presented with a series of specific questions about how the teacher leads their class. These questions are answered from bad to excellent, represented with values ranging from 1 to 5. Before finishing the evaluation, the student is allowed to write textual comments about the teacher's performance.

Once the teachers assign a final grade to students, the university's portal allows teacher access to the results of the teacher through the teacher's portal. The results are an average of the grades obtained in each of the specific questions, and positive and negative comments are received. These results help them identify strengths and weaknesses within their teaching model by receiving immediate feedback, which allows them to make relevant changes to their practices to promote better teaching and better learning.

This chapter is an extension of a previous study (Jiménez, García, Florencia-Juárez, Rivera & López-Orozco, 2018). Here, we use sentiment analysis techniques on opinions issued by the students to categorize the comments into positive and negative in their native Spanish language. For this, a comment repository was built with student opinions issued over four years, manually categorized as positive and negative, to build later feature vectors, which were used to train a 1-NN and the Bagging algorithm. Work in the same line was presented by Gutiérrez, Ponce, Ochoa, and Álvarez (2018), in which the performance of teachers was analyzed using reviews written by students of the Polytechnic University of Aguascalientes.

It is important to mine text in Spanish because there is not much work being done in the fields of natural language processing and opinion mining using Spanish language tools and libraries, despite the fact that opinion mining methodologies in English might not fit other languages without making major modifications.

The chapter is organized in the following manner. Section 2 briefly describes related works in opinion mining. In Section 3, the methodology undertaken in the development of research. Section 4 shows the experimental configuration adopted. Subsequently, in Section 5, the results are described and discussed. Finally, Section 6 concludes and proposes future lines of research.