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## A Sentiment Analysis Hybrid framework for recognizing Sarcasm and Negations in User Generated Content: The case of Greek Language

The development of the World Wide Web 2.0 has allowed users to upload, share, and exchange their opinions or ideas on various topics on a plethora of websites. As a result, a large volume of data is generated that contains useful information about consumers' preferences from various sources, such as micro-blogs, reviews in digital marketplaces, discussion forums, and more. In research, various methodologies are presented to address the specific problem with the Sentiment Analysis to be the preferred one. Two techniques have also dominated: the machine learning technique and the semantic orientation technique. Additionally, three levels of analysis are presented: the text level, the sentence level, and the aspect level. Several frameworks have already been proposed that use machine learning techniques, while the same level of interest is not shown for the semantic orientation technique. Limited research is also presented in the recognition of sarcasm and negations, especially in user-generated content. It is worth noting that sarcasm is considered an advanced form of speech and is characterized as an important research field in Sentiment Analysis and in Natural Language Processing in general. The purpose of this research is to present a hybrid framework using the machine learning technique and the sentiment orientation approach of Sentiment Analysis for detecting the sarcasm and the negation in opinionative sentences in Greek language. The framework is tested in a dataset that contains 80,000 customers' reviews written in Greek Language and the findings will be practical and significant, as not enough attention has been paid to Natural Language Processing techniques and tools used in combination with non-English, like the modern Greek language. As future work, the framework will be implemented in English Language.

**Keywords:** Analytics and Data Science, Social Networks, Natural Language Processing, Computational Linguistics, Sentiment Analysis, Food & Beverage Sector, Greek Language

## Biography:

**Dr. Anastasios Liapakis** is the head of the Informatics Department at New York College of Greece. He is a PostDoc Researcher in the era of Big Data Analytics in the Informatics Laboratory of the Agricultural University of Athens and an Adjunct lecturer in the National and Kapodistrian University of Athens, Dept. of Digital Industry Technologies (Since 2020). He received his Ph.D. in Informatics, in the field of Data Analytics in Social Media Networks from the Informatics Laboratory of the Agricultural University of Athens. His Ph.D. Research was co-financed by the State Scholarships Foundation (IKY). His main research interest evolves around Data Structures, Big Data Analytics, Knowledge Engineering, Management Information Systems, Machine Learning techniques, Natural Language Processing, and Sentiment Analysis applied in problems concerning Management, Economics, and Marketing. His notable research work, published in national and international peer-reviewed Journals and Conferences, has got a significant number of citations. One of his research papers published in International Journal of Computational Linguistics (IJLC) was awarded the Best Paper Award of 2020. He has participated in four EU- leading research projects in the area of Informatics. He has been teaching Informatics, Programming, Object-Oriented Programming, Databases, Data Analytics, ICT courses, and Management Information Systems for the past 6 years in public and private universities in Greece.