

Title: Source Recommendation System Using Context-based Classification: Empirical Study on Multi-level Ensemble Methods

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Abstract: Aim/Background: This research aims to develop an automated contextual classifier for scholarly papers by utilizing established algorithms and understanding the information retention of different parts of a scholarly article, such as the Abstract, Article Title, and Keywords. It also seeks to recommend a contextual classifier-based recommender system to help academics identify credible sources. Scholarly articles from various study fields often use similar terms in their titles and keywords. However, finding a publication venue can be challenging for researchers at the beginning of a scientific inquiry. Thus, it is crucial to classify information based on its context, especially when abstracts, keywords, and titles receive equal attention. Materials and Methods: An ensembled model was developed and trained using 114K instances from 38 classes of the Web of Science (WoS) dataset and 40 classes of the Dimensions dataset. The ensemble approach incorporated both machine learning and deep learning algorithms to build a diverse classifier. The model was evaluated by testing it with an 80:20 train-test split to assess performance. The classifier was further integrated into a recommender system designed to suggest probable publication sources based on given article information. Results: The ensemble classification approach demonstrated superior performance with faster inference and efficient training time. The balanced training model, tested on 114K instances, effectively categorized scholarly articles into one of 40 categories. The recommender system was capable of recommending up to 10 probable publication sources based on the article's Title, Keywords, and Abstract. Models utilizing abstractions yielded the best results and provided a better understanding of the context in every iteration of the experiment. Conclusion: This study successfully developed an ensemble-based contextual classifier for academic papers, which can also function as a recommender system. The system aids researchers in choosing the most appropriate sources to publish by categorizing articles into 40 categories and suggesting credible publication venues. This approach simplifies the decision-making process for academics, enabling them to identify relevant publications and suitable sources for their work more efficiently.

Keywords: Scholarly Article, Recommendation System, Subject Classification, Contextual Classification, Text Analysis

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