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Positive unlabeled learning for building recommender systems in a parliamentary setting

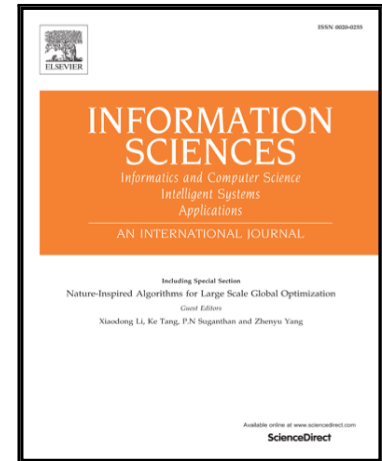
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# Positive unlabeled learning for building recommender systems in a parliamentary setting

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## Abstract

Our goal is to learn about the political interests and preferences of Members of Parliament (MPs) by mining their parliamentary activity in order to develop a recommendation/filtering system to determine how relevant documents should be distributed among MPs. We propose the use of positive unlabeled learning to tackle this problem since we only have information about relevant documents (the interventions of each MP in debates) but not about irrelevant documents and so it is not possible to use standard binary classifiers which have been trained with positive and negative examples. Additionally, we have also developed a new positive unlabeled learning algorithm that compares favourably with: a) a baseline approach which assumes that every intervention by any other MP is irrelevant; b) another well-known positive unlabeled learning method; and c) an approach based on information retrieval methods that matches documents and legislators' representations. The experiments have been conducted with data from the regional Spanish Andalusian Parliament.

*Keywords:* positive unlabeled learning, content-based recommender systems, parliamentary documents, k-means, support vector machines

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## 1. Introduction

In the information society we live in today, enterprises, institutions and individuals can easily access vast amounts of information. In many cases, users do not need to actively search for the information they need but play a more passive role and are constantly bombarded with advertising, news, e-mails, etc. The problem is then to separate the wheat from the chaff so as to determine what is interesting, important or useful and what is not. This task is hard

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