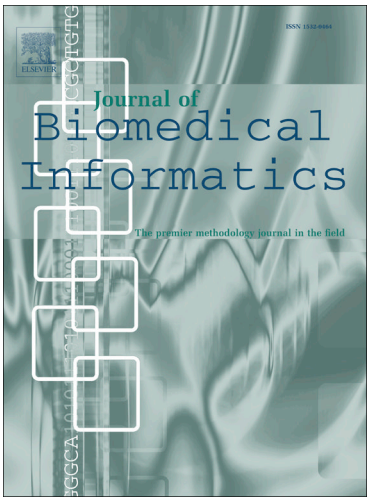

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Reproducibility of Studies on Text Mining for Citation Screening in Systematic Reviews: Evaluation and Checklist

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Abstract

Context: Independent validation of published scientific results through study replication is a pre-condition for accepting the validity of such results. In computation research, full replication is often unrealistic for independent results validation, therefore, study reproduction has been justified as the minimum acceptable standard to evaluate the validity of scientific claims. The application of text mining techniques to citation screening in the context of systematic literature reviews is a relatively young and growing computational field with high relevance for software engineering, medical research and other fields. However, there is little work so far on reproduction studies in the field.

Objective: In this paper, we investigate the reproducibility of studies in this area based on information contained in published articles and we propose reporting guidelines that could improve reproducibility.

Methods: The study was approached in two ways. Initially we attempted to reproduce results from six studies, which were based on the same raw dataset. Then, based on this experience, we identified steps considered essential to successful reproduction of text mining experiments and characterized them to measure how reproducible is a study given the information provided on these steps. 33 articles were systematically assessed for reproducibility using this approach.

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