

Novel Approach for Query Expansion Using Genetic Algorithm

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Abstract

This paper is focused towards query expansion, which is an important technique for improving retrieval efficiency of an Information Retrieval System. Specifically the paper proposes a novel evolutionary approach for improving efficiency of Pseudo Relevance Feedback (PRF) Based Query Expansion. In this method the candidate terms for query expansion are selected from an initially retrieved list of documents, ranked on the basis of co-occurrence measure of the terms with the query terms. Top n selected terms create a term pool. From this term pool, Genetic Algorithm is used to select a thematically rich combination of terms, which provide the terms for expanding the query. We call this method as Genetic Algorithm Based Query Expansion (GABQE). The experiments were performed on standard CISI dataset. The results are quite motivating and one can clearly observe the difference in the result when GA is not used and when GA is used. The paper uses GA for improving PRF based query expansion, but at the same time it can also be generalized and tested for other types of query expansions, where terms may be selected in a different way but a good combination of expansion terms can be obtained using GA.

Keywords: Information Retrieval; Query Expansion; Genetic Algorithm.