
MetaMap Indexing (MMI) Project

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The primary purpose of the MetaMap Indexing (MMI) project is to determine the usefulness of MetaMap processing applied to the task of automatic or semiautomatic indexing of the biomedical literature. MetaMap discovers UMLS[®] Metathesaurus[®] concepts referred to in biomedical text such as the titles and abstracts of MEDLINE[®] citations. Concepts for a given citation are ranked by a function which emphasizes presence in the title and specificity of the concept. It is hoped that the ranked concepts can be used directly for retrieval purposes or indirectly as suggested terms during manual indexing. In addition concepts gleaned from users' queries can be selectively used to expand the query.

Retrieval experiments on three test collections of MEDLINE citations show that using the automatically determined MMI-ranked concepts as indexing terms improves retrieval results by about 5%. Also using them to expand users' queries increases the improvement to about 8%. These results are about half as good as those obtained by using the MeSH field of the citations. Research efforts will be focused on closing the gap between the two methods. As an alternative to this completely automatic approach, semiautomatic indexing experiments in which indexers are shown MMI-ranked concepts as suggested indexing terms are under way.

Recently a prototype system for performing retrieval experiments using alternative methods of computing recommended indexing terms has been created. This Indexing Prototype initially has five indexing term computation methods. The Prototype allows for weighting these methods and computing recall/precision values for a small testset of two hundred MEDLINE citations. The MMI indexing method is the single best performer of the five methods. And the MMI method combined with a smaller weighting for John Wilbur's Related Citation method (ala PubMed) produces the best results to date. Current research efforts concentrate both on exploring additional methods for recommending terms and on improved ranking of the recommended terms once they have been computed.
