Ranking is gaining increasing popularity in todays world. Information Retrieval is one field which highly uses ranking algorithms to order the result set according to the query.

Learning to Rank:

Learning to Rank algorithms have a test database which is used to generate a model. In information Retrieval the training databases are a set of documents along with its related query which is used to generate a model. This model is then further used to rank other documents.

Ranked documents

Model

f (q, d, w)

Ranking System

Test Data

Queries and related documents

(Training Data)

Learning Algorithm

Evaluation of Model:

Various evaluation measures are used to evaluate how good the models created are. Some of them are the following:

1. MAP (Mean average precision):
2. NDCG (Normalized discounted cumulative gain):
3. MRR (Mean reciprocal rank):
4. WTA (Winners Take all):

Categorization of learning to Rank algorithms:

1. Pointwise: Input: single document , Output: scores or class labels
2. Pairwise: Input: document pairs, Output: partial order preference
3. Listwise: Input: document collections, Output: ranked document List

Pairwise:

Given a set of input documents, reduces ranking to a pair of documents (di,dj) such that di>dj. Examples of pairwise learning to Rank algorithms are: RankNet, FRank, RankBoost, Ranking SVM etc.