

DESIGN STUDY FOR AN ANOMALOUS STATE
OF KNOWLEDGE BASED INFORMATION RETRIEVAL SYSTEM

Abstract

We report the results of a design study for an interactive information retrieval (IR) system which will determine structural representations of the anomalous states of knowledge (ASKs) underlying information needs, and attempt to resolve the anomalies through a variety of retrieval strategies performed on a data base of documents represented in compatible structural formats. Basic premises of the project are: that information needs are not in principle precisely specifiable; that it is possible to elicit problem statements from information system users from which representations of the ASK underlying the need can be derived; that there are classes of ASKs; and that all elements of the IR system should be based upon the user's ASK. We have developed a relatively free-form interview technique for eliciting problem statements, and a statistical word co-occurrence analysis for deriving network representations of the problem statements. Structural characteristics of the representations have been used to determine classes of ASKs. The information structures underlying abstracts of documents have been similarly represented, and both ASK and information structures have been evaluated by, respectively, users and authors. Some results are: that interviewing appears to be a satisfactory technique for eliciting problem statements from which ASKs can be determined; that the statistical analysis produces structures which are generally appropriate both for documents and problem statements; that ASKs thus represented can be usefully classified according to their structural characteristics; and that of 35 subjects, only two had ASKs for which traditional 'best match' retrieval would be appropriate. The results of the design study indicate that at least some of our premises are reasonable, and that an ASK-based IR system based on them is feasible.