Sep 1 - ReQue Query Expander - Introductory Notes

From

ReQue Query Expander - Introductory Notes, Sep 1, 2020, covers ReQue https://github.com/hosseinfani/ReQue, cikm2020 release Please see related cikm2020 paper *ReQue: A Configurable Workflow and Dataset Collection for Query Refinement*.

Query Expansion can improve information retrieval results (typically measured by precision, recall, or a derivative metric). The application ReQue (**Re**fining **Que**ries) provides a means to expand IR queries [references], and provides a retrieval score for those updated queries. Scoring can use TREC's trec_eval. Query expansion options include global (involving an entire corpus) or local (using the terms in a query) techniques.

Options are provided for many transformation techniques which directly perform query expansion, or contribute to query expansion, including: the use of a Thesaurus, the use of various text embedding techniques (Word2Vec, Gloves, etc), the use of various language processing resources (e.g., WordNet, ConceptNet, Tagme, various Stemmers) and the option of several unsupervised and supervised state of the art approaches to query expansion. The intent is that ReQue is extensible, say if there was a need for Transformer-based embeddings, or other means of addressing a retrieval problem. (**Please see related ckim paper for citations, references)**

To install ReQue, a working Java environment with an instance of the IR retrieval kit "anserini" is required. ReQue has a reserved installation directory for anserini installation. It is also possible to create a symbolic link (or equivalent) between the ReQue anserini directory and the actual anserini installation directory, so that anserini can be installed where it is convenient.

ReQue requires advanced skills for installation: knowledge of Java, Python, and the general principles of retrieval evaluation. ReQue activities (installation, query expansion) are performed at the command line. Note that ReQue works with the latest releases of Java, Python, and their prerequisite operating system versions; at the time of writing these are Java 11, Python3.7, and Ubuntu 18. ReQue has also been tested on the RedHat derivative CentOS 7, and on Windows 10.

ReQue makes use of existing datasets, including **Robust04, Gov2, ClueWeb09-B, and ClueWeb12-B13**, for retrieval testing. There is a particular place for each dataset. There is an output directory for the results of each technique of query expansion. **Note that a Sysadmin must first install the prerequisite software (e.g. Java, Maven, anserini) and demonstration datasets before ReQue installation can begin.** Instructions for download and installation of datasets are provided.

ReQue is the work of Ryerson University's Laboratory for Systems, Software and Semantics (LS3), http://ls3.rnet.ryerson.ca/ from the faculty of Engineering and Computer Science. The work has been funded by Canada's National Research Council. If you use ReQue, please cite our CKIM 2020 paper *ReQue: A Configurable Workflow and Dataset Collection for Query Refinement*. Please report any concerns (i.e., *bugs*) about the ReQue application by using the standard GitHub issue reporting process.

We welcome your interest in our work. We are always looking for talented associates, post-docs, and researchers. **Please contact LS3 Director Ebrahim Bagheri AT Ryerson DOT ca with questions about openings at the LS3 lab.**

For ReQue, **we acknowledge** and incorporate work of (David R. Cheriton Chair at the University of Waterloo, Professor Jimmy Lin), in particular the research retrieval engine **anserini** https://github.com/castorini/anserini . Further, **we acknowledge the work of Ahmad et al. sigir2019** , their work *Cair* https://github.com/wasiahmad/context_attentive_ir which produces data which ReQue validates as a benchmark.

Finally, **we acknowledge a plethora of information retrieval researchers who came before us; we stand on their shoulders.**

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