SciX
[SciXplorer.org]

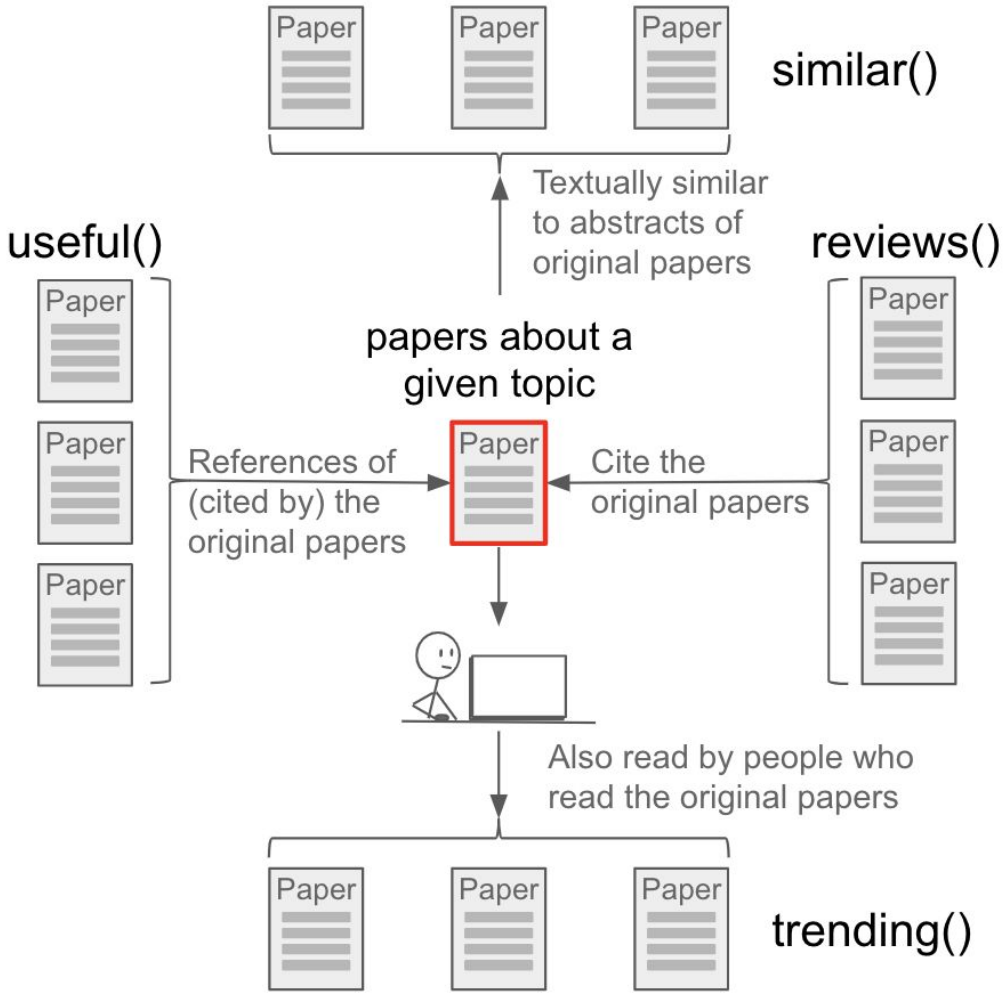
Second Order Operators in SciX

Second Order Operators (SOOs) are database functions which form secondary queries based on attributes of the objects returned in an initial query; they can provide powerful methods to investigate complex, multipartite information graphs. The Science Explorer (SciX) has implemented four SOOs, *reviews*, *useful*, *trending*, and *similar* which use the citations, references, downloads, and abstract text.

All current SciX SOOs take a list of articles as input, normally as returned by a query, and return a list of articles as output. The four SOOs currently in the SciX are:

1. **Similar**. The *similar* operator takes the text of the abstracts of the papers in the 1st order list, combines them into a single 'document', then ranks all the abstracts in the SciX by their text based similarity to this combined document, and returns the ranked list.
2. **Useful**, The *useful* operator takes the reference lists from the papers in the 1st order list, combines them and returns this list, sorted by how frequently a referenced paper appears in the combined list.
3. **Reviews**. The *reviews* operator takes the lists of articles which cited the papers in the 1st order list, combines them, and returns this list sorted by how frequently a citing paper appears in the combined list.
4. **Trending**. The *trending* operator takes the lists of (anonymous) users who read the papers in the input list, finds the lists of papers which each of them read, combines these lists, and returns the combined list, sorted by frequency of appearance.

An extensive discussion of these capabilities has been published in the BAAS:
https://baas.aas.org/pub/2020i0207/release/1



For example, the query *reviews(exoplanet atmospheres)* returns: