



WACHSTUMSTHEORIE PR  
IMMOBILIEN CONTROLLINGINSTRUM  
BANK WEB 2.0 WORD OF MOUT

RENTENREFORM  
LIQUIDITÄTSRISIKO VIRALES MARKET  
ERFOLGSFAKTOR  
REN DISSERTATION WINDENERGIE  
TRENDFORSCHU  
KETTE MITARBEITERGESPRÄCH WPG  
DERIVATE  
PRICING  
KEHOLDER MEZZANINE ARMUT

ETHIK HANDBUCH SUPPLY  
DISPOSITION LUXUS  
BETRIEBLICHES GESUNDHEITSMANAGEMENT

ALTERE ARBEITSKRÄFTE  
UMWELTANALY  
MULTICHANN

AMERIKA  
CERTIFICATES  
E-PROCUREMENT  
NETWORK  
RECRUITING  
TRANSFERPREIS  
COOPETITION  
E-LEARNING  
CONTROLLING  
STANDORT  
KRISE

Open Science  
#osc2020



















### The opportunity behind Open Access

In 2018, Open Access represented about 28% of total published scientific articles. There are many arguments in favour of Open Access to scientific publications, in particular, it is said to improve dissemination of research to interested citizens. In this work, we study an example of a possible use of Open Access to improve citizens' information. Our main hypothesis is that automatic information retrieval from large corpora of peer-reviewed academic research articles can help the automatic sourcing of correct answers to scientific queries from a general audience.

### Increasing your results

Research articles are available in Open Access. This means that you can access them for free. This is a great advantage for researchers who are interested in a specific topic. You can find the full text of the article, which is often not available in the print version. This can save you a lot of money and time. You can also find the full text of the article in a format that is easy to read and understand. This can help you to understand the article better and to use the information it contains more effectively.

### Our objective: an integrated pipeline

The final objective of the project is to develop an integrated pipeline that would enable users to evaluate whether a scientific claim is backed by peer-reviewed literature we work with claims of the type:

**"Does XXX cause / causes / prevents YYY"**

In this exploratory study, we assess in more details two indicators, such as two concrete examples:



Figure 1. Pipeline architecture

### Semantic similarity between concepts

DHA-based treatments for Alzheimer's disease (AD) caused severe harm in clinical trials, hence disproving it is worthy. A Word2Vec model was trained on 4,000 articles containing "DHA" which were retrieved from Europe PubMed. By measuring cosine similarity between concepts within the corpus, we show that known treatments (anticholinergics) are associated with the notions of "treatment" and "therapy" in the scientific literature whereas DHA (and other harmful agents) are not.



Figure 2. Similarity of concepts within the retrieved corpus

### Retrieval of

Nutrition studies often result in weak, inconclusive, or even contradictory findings. This is often due to the lack of a clear research question, the use of inappropriate methods, and the lack of a clear definition of the outcome. This can lead to a lot of confusion and uncertainty. In this study, we aim to improve the retrieval of relevant information from these studies. We will use a combination of natural language processing and machine learning techniques to identify the most relevant information and to present it in a clear and concise manner. This will help researchers and the general public to understand the results of these studies more effectively.



Figure 3. Automatic retrieval of relevant information

### Conclusions

This exploratory study presents the outline of a scientific fact-checker based on Open Access literature. It further shows, on two concrete examples, the use of text-mining algorithms on textual data to assess whether a scientific claim is backed by the peer-reviewed literature. Specific indicators were built and pipelines to combine them automatically were developed. These results validate the feasibility of the proposed approach. The next step is to assess the methodology on a corpus of scientific claims which are user-defined and expert evaluated. We will also develop an online application for the development of such a tool.







