Author's response to reviews

Title: SciReader enables reading of medical content with instantaneous definitions

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Author's response to reviews: see over
Dear Dr. Pafitis,
Thank you for allowing us the opportunity to resubmit our manuscript. Enclosed please find a revised manuscript for SciReader, Figure, and a point-by-point response to the reviewers’ criticisms of the original submission. We have revised the manuscript and added new assessment data to the paper and components in the application based on the Reviewer’s comments. We would like to thank the expert reviewer’s for their comments, which have lead to a much-improved manuscript.

**Reviewer 1**

1.1 The software is not accessible without password. The authors claim that the password protection will be removed, IF the paper will get accepted. Why that?

The password was originally added to restrict access to the site as it was being developed and considered for patenting. We also did not want the general public to gain access to the site in its Beta version until the review is complete. However, since this has become an issue we have removed the requirement of login credentials.

1.2 There is no scientific claim in this paper. No user acceptance tests are described. Is this tool really helpful for laymen, where is the proof?

This is a good point. We now include survey data where we allowed ~100 subjects to read a scientific document about biology and present results of a survey. The surveyed individuals had a high school level education.

1.3 How can you make sure that the definition given by the terminology resources is better understandable for lay persons than the term itself? The example you give shows: Somebody who doesn't know what a fibroblast growth factor is, will have no additional information from the definitions you provide.

A point well taken. The definitions for complicated words such as Fibroblast Growth Factor are not going to be easy to understand by the lay person. However, even using currently available approaches, such as Google or Wikipedia, understanding what Fibroblast Growth Factor means is still difficult. In order to alleviate some of the trouble in such definitions, however, we have now linked the ability to retrieve outside information such as a link to the Wikipedia or WebMD article for words where such a definition is available. The user will now have access to more detailed information if they wish to explore the meaning of a difficult word. However, SciReader is not perfect, but does provide an important step in literacy and this limitation is now addressed in the discussion.

**Reviewer 2**

2.1 I have tested SciReader with some medical blogs found at Google and some abstracts from PubMed. Basically, the SciReader application is usable and works fine. However, the originality of the given approach is not very clear.
There are currently no programs available that will allow a user to upload any text and get definitions for scientific or medical words in the same window. We have now elaborated on what are the distinguishing features of SciReader in both the introduction and discussion.

2.2 The references are quite old and do not reveal whether the described problem is still up to date.

We now reference more current papers and this has helped to define the problem in medical literacy that SciReader addresses.

2.3 Our experiences show that patients and other users ask the Web for definitions. A comparison of the SciReader approach to the existing Web is therefore mandatory.

The difference between SciReader and Google is that with SciReader, a user can get a quick definition for many words in a paper, enabling the user to get through the text quicker and more effectively than the user normally could. In Google, to research every word a user would need to spend a great deal of time. This is known to impact both comprehension and memory. SciReader presents a quicker and more seamless approach to the problem.

2.4 What could be the added value of such an application? With Google you can easily find textual definitions, images and other resources that are not contained in the controlled vocabularies used by SciReader. "Mechanotransduction", "intestinal cleansing" and "bloatedness" are just examples.

The controlled vocabularies used by SciReader are not comprehensive, but do include most words and will need to be continuously updated. The application does record words to the SciReader database, thus over time missing definitions can be added. We added the above word definitions. We now also provide convenient links to other websites and images when information for the chosen word is available.

2.5 If the medical content is - if at all - available as plain text, what could persuade the reader to upload the text to a free SciReader? A simple click on the unknown term, for example, is more convenient than entering a query into a search engine. The automatic implication of contextual terms could be another convenience. For single words and phrases, however, the added value is rather questionable. SciReader could be an approach to link expert knowledge to scientific papers. Such an application scenario seems to be more likely.

A future goal of the project is to accept more than just plain text as input. By the end of the project’s development we want to be able to accept word documents, pdf files, web site addresses, etc. This would open up the usability of SciReader greatly. Furthermore, we also hope to link more images and possibly videos to specific words, increasing the value of the definition. By allowing the user to answer the question: “Would you like to know more?” we could open up the power of a traditional search engine directly into the application. This would keep true to the core aspects of SciReader, namely the ability to get useful information on a world with the click of the mouse while keeping the lowest profile possible.
2.6 The manuscript is quite short for an original publication. 5 pages including the abstract, the references and additional files adversely affect the readability of the paper.

The manuscript is now longer with new data, no supplement, and more discussion on relevance, synergy with other tools, and limitations.