



authentiSci: Enabling scientists to provide guidance in a post-factual era of media

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Science is the key source of guidance for humankind. Everything we know and do is influenced by how we use and interpret scientific contributions. Scientists and journals are responsible for publishing credible research and informing people about their findings, but the latter relies heavily on news and social media as well. Science “fake news” and scientific misinterpretation are dramatically increasing every day in our society causing delays in our approach to current global problems. This era is heavily influenced by online news and media, which facilitate the spread of science, but insufficiently protect accurate interpretation of scientific contributions. Therefore, we developed an online web browser extension (**authentiSci**) that allows scientists to mediate the presentation of online science news and media to the general audience.

Background

A global digitalized world means there are no boundaries to access and spread information. Although it has significantly helped millions of people from different cultures and socioeconomic backgrounds, it comes with pitfalls such as the easy spread of disinformation, misinformation, and emotional polarization. In particular, the desire to capture readers’ attention is prioritised over respect for the truth and balanced argument. This is causing an extreme divergence of public opinion and scientific consensus.

Distortion of science in mainstream press introduces dramatic consequences on society and global health (1,2). This has been shown during recent events, where misguided interpretation of science presented online led to poor decisions that influenced the safety and health of millions of people during the COVID-19 pandemic. The issue is not limited to public health: the physics field experienced similar events in the last few weeks when the news and social media started to communicate findings from a recently published article by Shoemaker *et al* in *Annals of Glaciology* in 2020 (3). The headlines deviated from the main findings of the paper, and many people were led by the online media to believe incorrectly. These examples reflect an issue that has been happening for decades and is only getting worse (4).

Scientists have the experience and training to understand and interpret scientific publications targeted for the general population whilst being aware of their limitations, enabling them to acknowledge the credibility of scientific information reported on the internet. A feedback process for the authentication of media reports related to scientific evidence is urgently needed. We propose that by establishing a bridge between scientists and the broad public we can mitigate the bias and misunderstanding that commonly derives from misrepresented scientific literature on online platforms.



Aims and Objectives

Design and develop an easily accessible tool to allow the scientific community to communicate the validity of science news articles published by the media.

In line with the Lindau Guidelines pointing at communicating to society in a responsible manner, we aim to prevent the public from being misled about scientific matters. Our objective is to create a Google Chrome extension that enables lay audience readers to verify the reliability of the article they are reading.

Help to educate readers on how to assess the interpretation of science by the media.

Following the Lindau Guideline aiming at cooperating globally on global problems, we propose a platform to allow scientists to raise their voice on science presented online whilst also creating a resource for educating the public on how to evaluate science.

authentiSci

Introduction to the tool and website

authentiSci, a user-friendly Google Chrome extension and associated website, is being developed. The flow of information can be seen in **Figure 1**, where through the website, scientists rate a particular media article. Ratings from different scientists are accumulated and averaged on a database. When consulting the extension, the reader is presented with the aggregated scores, or has the ability to request for an article to be reviewed, as shown in **Figure 2a**. To aid readers to improve their interpretation of science within media coverages, *authentiSci* provides information on the main website called “How to spot good science”.

Novelty

An original crowd-sourced ratings system: The strength of *authentiSci* comes from its crowd-sourcing of reliability scores by scientists and experts. Existing services such as *fullfact.org* rely on a team of employees to write reviews of individual news articles. Due to the enormity of published information online, this restricts how many news articles can be reviewed and how many scientists can provide their opinion. Our tool enables the rapid assessment of science media articles from across the web, whilst maintaining a balance of individual opinion.

A boost to browsing science online: Until now, there are no online tools available enabling readers to gain immediate insight into the reliability of the scientific information they are reading. The easy installation, integration and use of *authentiSci* within a web browser extension is the first of its kind.

Authentication as a scientist

To rate the content, scientists need to authenticate their ORCID account in order to access the rating form in the *authentiSci* extension. ORCID IDs are used by researchers to aggregate their publications and patents and are regularly used in grant applications. One of the requirements to create an ORCID account is to have a valid institutional email address, which will guarantee the identity of the scientist rating the article. The Lindau alumni network is composed of around 7000 great scientists, which have the capacity of dramatically



reducing scientific miscommunication to the public with the use of this extension. If only 70% of this group were to use our tool and promote it to one other scientist in their circles, we could quickly have over 10 000 rated articles, providing the public with a broad array of opinions to refer to. Furthermore, this tool is not specific to a single scientific or academic discipline. Conceivably, any academic expert in any field will have the ability to fact check media articles and maintain accurate communication of their discipline. We, the scientific community, are a motivated crowd and look forward to protecting the integrity of our science and encouraging transparency from news outlets.

Scoring media articles

A Shiny (R) application embedded within our website enables verified scientists to score article content, guided by six questions (**Figure 2b**). By answering: *yes*, *no* or *not applicable/don't know*, reviewers can rate articles quickly and easily. Based on their answers, the application will provide a recommendation for the score, but allowing the user to tweak the value if desired. These scores, along with the corresponding web address are then submitted to an online MongoDB Atlas database, accessible by the Chrome Extension.

Towards a factual era of online media

The involvement of the scientific community will form the centre of the dissemination and use of our platform. We hope that our project will contribute to diminishing the misinformation published on news and social media. In the long term, *authentisci* could form a commonly-used interface influencing web users around the world. We foresee a time when journalists might contact scientists and experts to double check their interpretation before publishing articles. Furthermore, our project provides a platform representing the science community as a whole to bridge contact between the scientists and the media. Authentic science news in a factual era of online media is what we all look forward to.

References

Website: <https://www.authentisci.com/>

Github link to extension: <https://github.com/NiCl2/sciathon>

1. Woloshin S, Lisa MS. (2006). Media reporting on research presented at scientific meetings: more caution needed. *Medical Journal of Australia* 184.11: 576-580.
2. Sun Z, Cang J, Ruan Y, ZhuD. (2020). Reporting gaps between news media and scientific papers on outdoor air pollution–related health outcomes: A content analysis. *The International Journal of Health Planning and Management*, 35(1), 221-232.
3. Shoemaker IM, Kusenko A, Munneke PK, Romero-Wolf A, Schroeder DM, Siegert MJ. (2020). Reflections on the anomalous ANITA events: the Antarctic subsurface as a possible explanation. *Annals of Glaciology*, 1-7.
4. Davidson, M. (2017). Vaccination as a cause of autism—myths and controversies. *Dialogues in clinical neuroscience*, 19(4), 403.

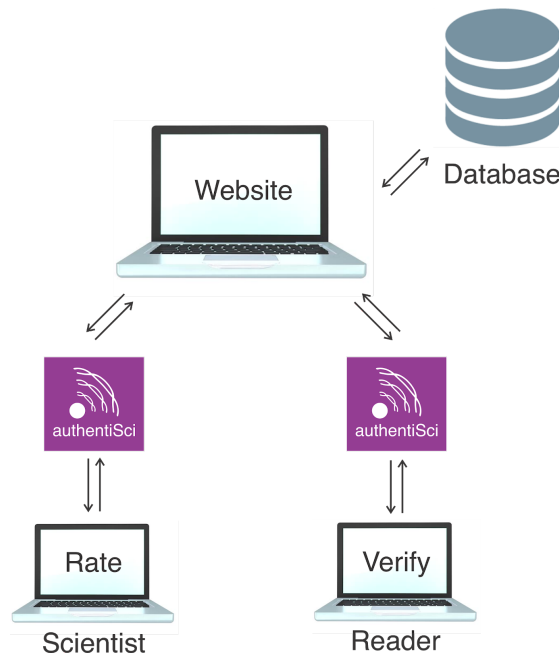


Figure 1: The flow of *authentSci* information, which consists of three main systems. The systems include (i) the Chrome extension, represented as the purple square logo, (ii) the *authentSci* website, and (iii) the database, storing the ratings provided by the scientists and the media posts requiring a review, which has been requested by the reader.

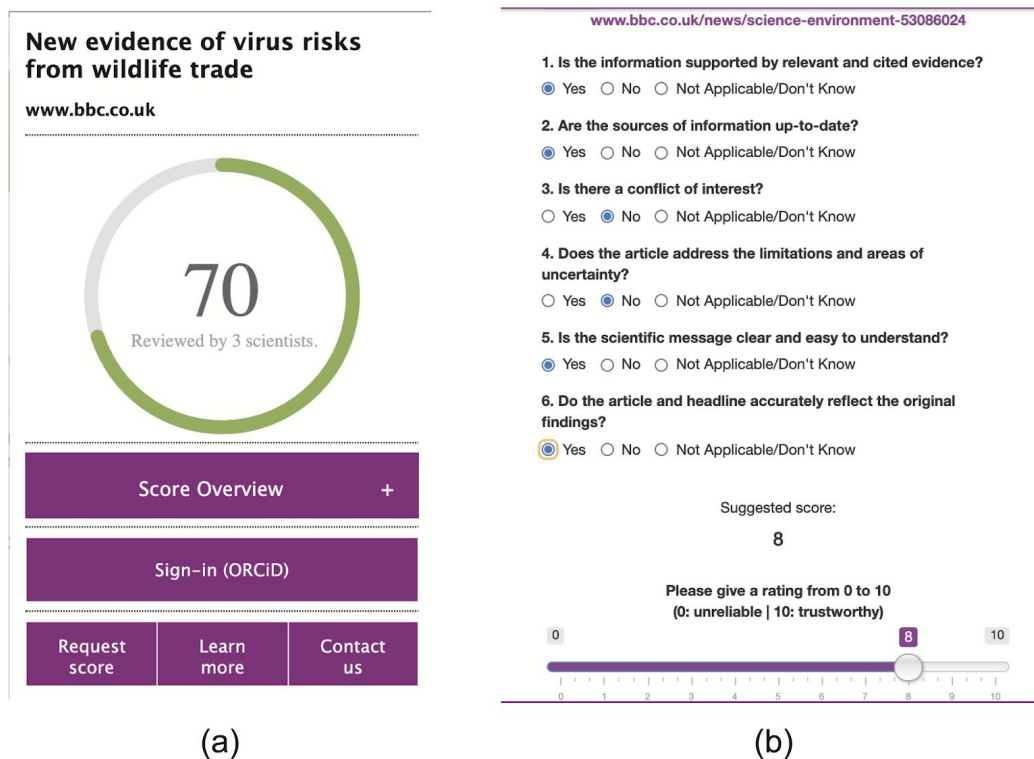


Figure 2: Visuals of the developed extension (a) and the web questionnaire where a verified scientist would rate a media article (b). The extension presents the aggregated scores and has the ability to request for an article to be reviewed.

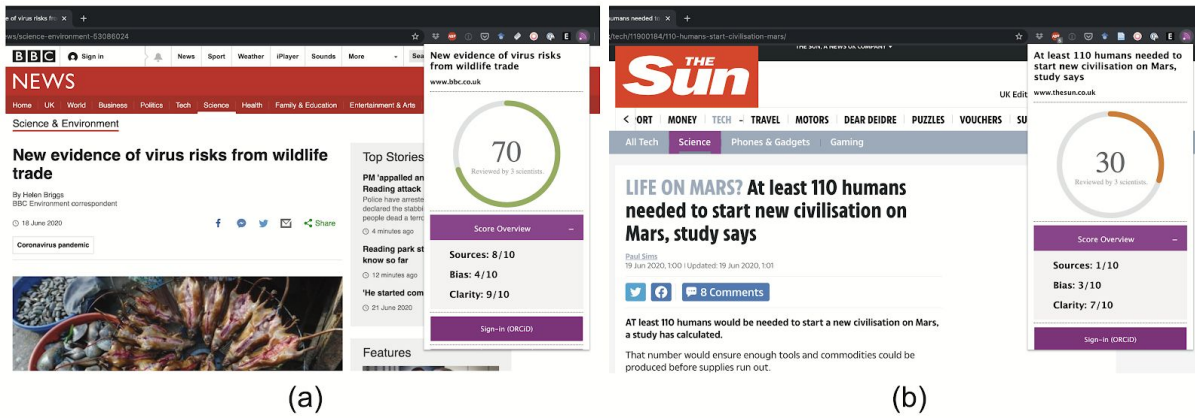


Figure 3: Examples of extension use, where (a) and (b) are examples of good and bad websites, respectively. The extension displays the total reliability score of the website and the score breakdown based on the three categories, based on the scientists' ratings provided. The circle enclosing the overall score provides a visual interpretation.