

Information Hygiene: The Fight Against the Misinformation “Infodemic”

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With misinformation spreading more rapidly and more broadly than reliable information, the serious impact of the resulting “infodemic” is evident globally, in areas ranging from health to politics and even invasion and war. Although the originators of misinformation may be malicious entities exploiting social media, “fake news,” and conspiracy-theory generators, it is ourselves, consumers of such information, and our own network of people that propagate misinformation and fake content simply by sharing them often without assessing their validity. So, we can be—and should be—part of the solution to this growing problem. We should develop and adopt information hygiene practices that contribute to misinformation detection or at the least curb our contribution to its spreading. To develop such practices effectively, the research community is recommending several new and innovative technical solutions and methodologies that can help us make a more informed assessment of the trustworthiness of information we come across online, whether in posts on social media, online articles, or multimedia.

This special issue of *IT Professional* begins with “Fake News and Misinformation During the Pandemic: What We Know and What We Do Not Know” by Ho *et al.*, which provides an overview of the nature and scale of the challenges we face with particular focus on health misinformation. They emphasize that misinformation is often fueled by interpreting correct information incorrectly, especially where health misinformation and political agendas converge. In their research, as some of the most promising means for addressing misinformation, they identified review scores and improved information presentation styles, information literacy, and the use of appropriate technologies for supporting detection. For

example, as discussed in the next article, machine learning can help address misinformation at scale and support the user in making faster and more accurate trustworthiness assessments.

In the article “How Machine Learning May Prevent the Breakdown of Democracy by Contributing to Fake News Detection,” Choraś *et al.* presented the project SocialTruth, which is one of European Commission recently funded projects (along with EUNOMIA,¹ WeVerify,² PROVENANCE,³ and many more) to develop intermediary-free tools that help the user detect misinformation, specifically in social media. SocialTruth’s verification breaks down social media posts into separate groups and sends them to a diverse range of verification services that advise the user on the likely trustworthiness of a post based on sentiment analysis, linguistic features, and other sources of data. Its tools were tested not only on test datasets, but also in real conditions with citizens and journalists.

Next, in “COVID-19 Fake News Detection Using Ensemble-Based Deep Learning Model,” Kumar *et al.* present an ensemble-based model for detection of COVID-19-related misinformation shared through Twitter. This model achieves very high accuracy in comparison with common techniques that do not use the ensemble approach.

One interesting conclusion that we can draw from these articles and other ongoing developments is the growing attention given by the research community on supporting users with technological solutions that can make information hygiene more practical, which range from flagging social media posts based on analysis of the content to helping them more easily spot deep-fakes that may not be immediately obvious to the human eye. The combination of better understanding the problem through literacy, education, and awareness creation and supporting the users practically with effective technical solutions is a promising direction to fight the misinformation infodemic. That said, we also realize that there is a regulatory dimension to the fight against misinformation and disinformation. As this

ALSO IN THIS ISSUE

FEATURES: This edition's feature articles cover an array of IT-relevant topics dealing with high-performance computing, blockchain in education, AI in health-care, and the concept of agility.

In high-performance computing, the message passing interface (MPI) standard for data communication is highly complex but supports an application program interface that is of low level and unsafe. "Compiler-Aided Type Correctness of Hybrid MPI-OpenMP applications" by Hück et al. takes a deep dive on the implications of MUST and the author-developed TypeART correctness checking for hybrid MPI-Open MP applications.

The pandemic-induced reliance on remote learning is liable to remain in place for the foreseeable future. "On the Use of Blockchain Technology for Education During Pandemics" by Cheriguene et al. proposes the use of a safe open-ledger blockchain to effectively manage faculty and student access to both courses and exams via enabled remote learning.

The United Nations Sustainable Development Goals put great emphasis on accessibility to healthcare and social equity. Alonso et al.'s "Digital Health and Artificial Intelligence: Advancing Healthcare Provision in Latin America" examines the role of emergent AI in Latin American healthcare systems and offers avenues of future research necessary to optimize these systems under ethical governance.

"Fake Agile: What Is It and How to Avoid It?" by Mesquida et al. establishes the premise that the term "agile" has been so diluted that its true meaning according to the Agile Manifesto has been lost. This article traces how "Fake Agile" comes to being in the organizational setting and offers paths to mitigate this problem.

DEPARTMENTS: This edition's department articles remain relevant to current trends in IT and its management, including treatment of the metaverse, emotion in the C-suite, and misinformation borne of tribal behaviors and ransomware.

The metaverse, Web 3.0, and NFTs are taking hold in organizations wishing to connect with younger audiences. "Web 3.0 and the Metaverse Shaping Organizations' Brand and Product Strategies," by Kshetri, in this month's IT Economics department, focuses on brand identity, the role of gaming, and other means of brand engagement in emergent metaverse endeavors.

Bias, fear, hope, confusion, denial, and stubbornness all reside, to some extent, in most C-suites. Andriole's insightful "How Emotional is Your C-suite?," in the Life in the C-suite department, looks at how emotion often overshadows rational thinking concerning IT in the C-Suite. It also suggests a means to assess and overcome the common pitfall of putting perceptions before logic.

Dr. Marshall McLuhan was said to have predicted the Internet, but he also predicted a resurgence of tribalism as a result of electronic technology. Hurlburt's IT Trends department, "Predicting Social Behavior of Tribes and Misinformation" examines the phenomenology of tribal behavior and offers remedies through revitalized 21st century education.

Ransomware is software that blocks access to one's data until a ransom is paid, often in cryptocurrency. Ransomware attacks have become a major cybersecurity concern for academic, governmental, and corporate institutions. "Ransomware as a Business (RaaS)," by Kshetri and Voas, explores the extent of engagement, the costs, and the methods involved in this growing threat to security in this month's Cybersecurity department.

We believe this edition is loaded with valuable insights regarding best practices in information hygiene.

special issue demonstrates, technology has many answers, but it does not have them all.

REFERENCES

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3. B. Yousuf et al., "PROVENANCE: An intermediary-free solution for digital content verification," in *Proc. 4th Workshop Knowl.-Driven Analytics Syst. Impacting Hum. Qual. Life*, Nov. 2021, pp. 1–13.

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