

Researchers use Amazon reviews and AI to predict product recalls

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An AI named BERT identified recalled foods from Amazon customer reviews with 74-percent accuracy, then found thousands of potentially unsafe but unrecalled products.

The Food and Drug Administration (FDA) can take months to identify and verify a problem before issuing a [product recall](#), so most recalls come from manufacturers, often after enough people have gotten sick to generate bad press. But soon, [artificial intelligence](#) could comb through online reviews to identify serious threats to [public health](#), and speed the process of a product recall, according to a new study co-authored by a Boston University School of Public Health (BUSPH) researcher.

In the study, published in the *Journal of the American Medical Informatics Association (JAMIA) Open*, the researchers taught an existing "deep-learning" AI called Bidirectional Encoder Representation from Transformations (BERT) to predict food product recalls from Amazon reviews with about 74-percent accuracy. The AI also identified 20,000 reviews that suggested potentially unsafe food products that had not been investigated.

"Health departments in the US are already using data from Twitter, Yelp, and Google for monitoring [foodborne illnesses](#)," says the study's senior author, Dr. Elaine Nsoesie, assistant professor of global health at BUSPH. She explains that, in contrast, this study was able to look at the safety of specific food products. "Tools like ours can be effectively used by health departments or food product companies to identify consumer

reviews of potentially unsafe products, and then use this information to decide whether further investigation is warranted."

BERT is trained on large bodies of English-language text, including English Wikipedia, and can interpret text for a given purpose. Nsoesie and her colleagues used crowdsourcing (by real humans) to categorize 6,000 of the reviews that contained words related to FDA recall reasons, such as "sick," "label," "ill," "foul," "rotten," etc., along with metadata such as the review's title and star rating. BERT was able to look at these same customer reviews and correctly identify recalled food products with 74-percent accuracy. It then found terms associated with FDA recalls in 20,000 other reviews.

More information: Adyasha Maharana et al, Detecting reports of unsafe foods in consumer product reviews, *JAMIA Open* (2019). [DOI: 10.1093/jamiaopen/ooz030](https://doi.org/10.1093/jamiaopen/ooz030)

Provided by Boston University School of Medicine

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