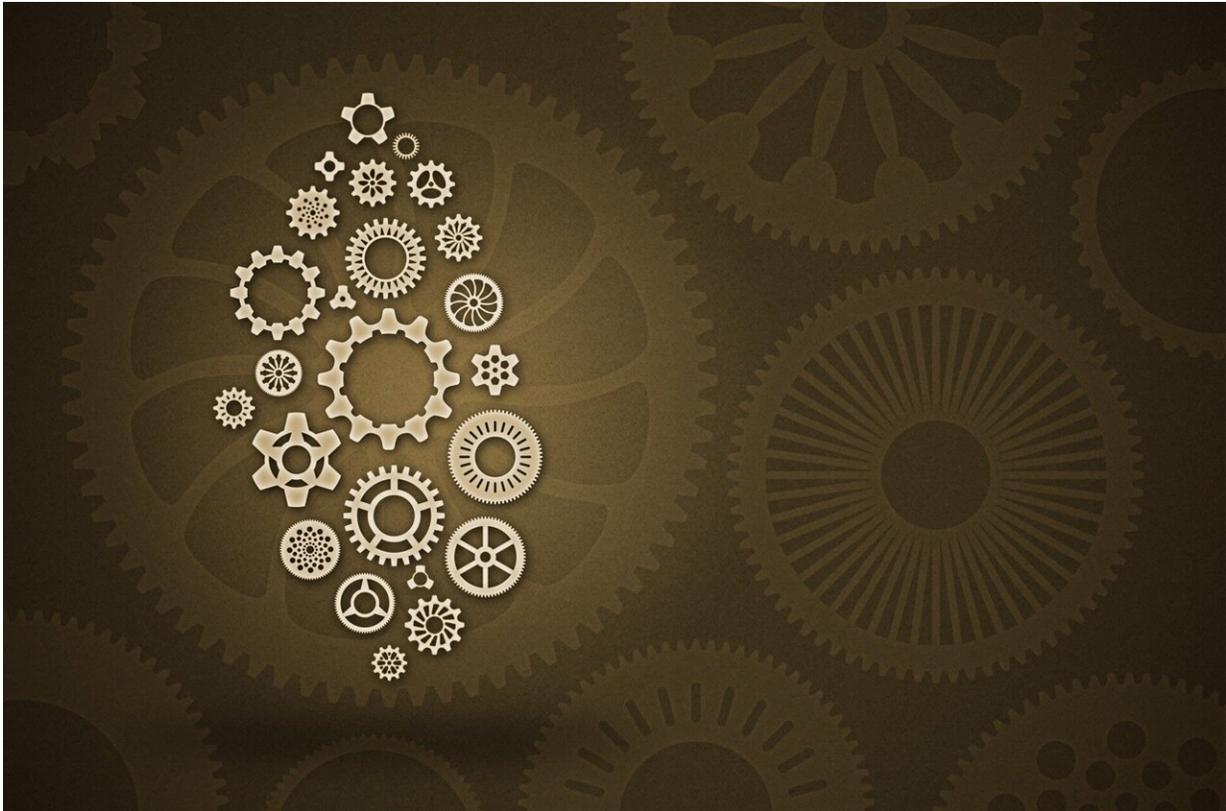


AI data fusion could boost sustainability

October 31 2023, by David Bradley



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A new framework that combines artificial intelligence (AI) and data fusion techniques could improve product inspection for sustainability and within the context of the so-called circular economy, according to research [published](#) in the *International Journal of Sustainable Manufacturing*. This work could help address the demands for

environmental responsibility across various industries.

AI has been with us for many years and many different forms. It has already been widely adopted in industry with the aim of helping to reduce the carbon footprint of various products and to meet consumer expectations for sustainable products. However, according to Robert Schimanek, Pinar Bilge, and Franz Dietrich of the Institute of Machine Tools and Factory Management at TU Berlin, Germany, there is an inherent disconnection between the product lifecycle and the AI applications that might be of benefit and as such effectiveness is thus limited. The researchers have developed a framework, which they hope will overcome this problem and allow data [fusion](#) and AI to work together to improve product inspection.

Data fusion involves combining different data sources, including [sensor data](#) and business information, to allow AI applications to make better predictions during product inspection, for instance. The framework focuses on finding ways to incorporate business data into the predictive models. The team's focus has been on the automotive aftermarket industry but might well be adapted to other industries.

The researchers add that their framework could become an important part of sustainable manufacturing principles. The key factor is that it can improve the management of product returns and reverse logistics so that they become invaluable resources within multiple lifecycles. The researchers explain that their framework can guide and improve decision-making.

Critical to the success of the [framework](#) is that the use of data fusion methods ensures stability and reliability even when prediction sources themselves might fail by adding a human factor to AI-based prediction all in the name of improving sustainability in the industry.

More information: Robert Schimanek et al, Data fusion for improved circularity through higher quality of prediction and increased reliability of inspection, *International Journal of Sustainable Manufacturing* (2023). DOI: [10.1504/IJSM.2022.134562](https://doi.org/10.1504/IJSM.2022.134562)

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