



When the nano composites detect changes in the gases emitted from food as it matures, the barcode changes colour | Photo source Iñigo De la Maza on Unsplash

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AI-POWERED APP CAN INSTANTLY RATE FRESHNESS OF MEAT

 FOOD & DRINK

The system works via a smartphone app, a biodegradable barcode and deep convolutional neural network artificial intelligence

Spotted: An international research team created an AI-powered e-nose that monitors the freshness of meat and fish. Led by scientists from Singapore's Nanyang Technological University, the system works via a smartphone app, a biodegradable barcode and deep convolutional neural network artificial intelligence.

The barcode is made of 20 dye-loaded nanocomposites embedded in cellulose acetate. When the nanocomposites detect changes in the gases emitted from food as it matures, the barcode changes colour. All materials in the barcode are non-toxic and biodegradable, making it safe to use across a range of foodstuffs and at various stages of preparation and use.

When the barcode is scanned, the AI reviews the type and volume of gases present in order to provide a measure of freshness. Researchers used three levels of classification (fresh, less fresh and spoiled) which they believe to be more useful than current "best before" labels. Rather than an arbitrary date, the longevity of the food depends directly on the rate of its decomposition.

By reducing the amount of food wasted, the environment, growers, distributors and consumers all benefit. In tests, the system achieved a 98.5 per cent rate of accuracy. The team has applied for a patent and is developing the barcode for use with a range of additional food items.

Other methods Springwise has spotted for reducing waste by better monitoring freshness include nanosensors that track the levels of a [plant growth hormone](#) and [replica fruits](#) with embedded temperature sensors to track produce in transit.

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Takeaway:

If used as part of the locavore movement, such sensors could not only boost trade by providing independent corroboration of claims of freshness, but could significantly reduce volumes of food waste. Consumers no longer need to sniff items to make guesses regarding the accuracy of “best before” dates. It could be interesting to see if such developments put pressure on long-life brands to reduce preservatives and find ways to incorporate the technology into their offerings, although consumer behaviour is likely to be the biggest driver of change.