



Artificial intelligence in sustainable food systems design

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Abstract

By 2050, the current challenges faced by our food systems will be further amplified by the need to feed 9 billion people. Water scarcity, pollution, soil degradation and the impacts of climate change on agricultural production are only a few of the environmental constraints we face. Designing services in any area of the food chain can no longer be done using a business as usual approach. Technologies such as artificial intelligence are disrupting agriculture, food processing and health outcomes in ways which could revolutionise how we relate to food and provide an opportunity to think differently about our food systems.

The research investigates artificial intelligence (AI) as a possible enabler of sustainability in food systems, with caveats. The technology could support transformational changes towards sustainable food systems but also creates issues of a new kind that designers can and should consider as part of their design brief.

Case studies on nutrition in schools and on food waste investigated the use of AI in the process redesign. The author will present some of the challenges, impacts, results and ethical considerations encountered. The focus on the methods of engagement include the use of traditional design thinking approaches, lean start-up and rapid prototyping where failing early is proving to be a critical component.

The use of AI ethics guidelines and sustainable development goals (SDGs) are used retroactively in the evaluation of the designed solution to provide some insights for future proactive design solutions.

Keywords: food systems, artificial intelligence, systems thinking, design innovation