Exploring how technology could change the way we interact with food

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Researchers are exploring how future "human-food interaction" technologies could bring entirely new experiences and novel ways to interact with food.

From the creation of 3D-printed personalized flavors to support the recall of memories for older people to taste-based representations of digital file download, future food technologies could offer a wide range of possibilities, say researchers.

These novel applications for future human-food interaction technologies are imagined as part of a recently published study by a team of Human-Computer Interaction researchers from Lancaster University and Dovetailed Ltd. Their paper explores previous research into technologies and food, and identifies new avenues for future research.

Other ideas include digital avatars that curate more mindful dining experiences, taste representations of emotions that can be exchanged by romantic couples, or smart tableware that encourages healthy eating by prompting diners to slow down their chewing speeds.

The researchers undertook a systematic literature review of 109 academic papers looking at technologies and food, and they also conducted interviews with 18 professional chefs to learn more about novel creative techniques the chefs use to enhance dining experiences.

The study looked at the sensory, emotional, cognitive, and social aspects of eating experiences, as well as insights from the chefs around the use of flavors and emotion, performance, the importance of sensory deprivation as well as stimulation, and cultural aspects around food.

As well as discovering new avenues of human-food interaction research, the research team designed a conceptual framework for designing new taste and user experiences, which will be of use to the human-computer interaction research community.

Professor Corina Sas, of Lancaster University and co-author of the paper, said, "A range of technology has been researched and developed

around food, from electronic probes that stimulate taste, to calories counting apps. Our research takes stock of existing food technology research, and through interviews with professional chefs, we identify new areas for researchers and designers to explore where new technologies could enhance our experiences around food.

"There is a lot of potential for technologies around food to help elicit emotions, aid memory recall, support storytelling and help regulate healthy eating behaviors, for example."

Dr. Tom Gayler, co-author of the study, said, "This work not only helps understand the ways food can be used today with the technologies we already know about, but also provides suggestions for new experiences and new technological solutions.

"This paper provides design tools for anyone interested in food, eating, and the body to use, helping them create richer and more engaging interactions."

The research is outlined in the paper "Exploring the Design Space for Human-Food-Technology Interaction: An Approach from the Lens of Eating Experiences' which has been published by *ACM Transactions on Human-Computer Interaction*.

The paper's authors are Dr. Tom Gayler, formerly of Lancaster University, Professor Corina Sas, Lancaster University, and Vaiva Kalnikaité of Dovetailed Ltd.

More information: Tom Gayler et al, Exploring the Design Space for Human-Food-Technology Interaction: An Approach from the Lens of Eating Experiences, *ACM Transactions on Computer-Human Interaction* (2022). DOI: 10.1145/3484439

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