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# Designing Recipes for Digital Food Futures

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**Abstract**

Digital food technologies such as diet trackers, food sharing apps, and 'smart' kitchenware offer promising yet debatable food futures. While proponents suggest its potential to prompt efficient food lifestyles, critics highlight the underlying technosolutionism of digital food innovation and limitations related to health safety and data privacy. This workshop addresses both present and near-future digital food controversies and seeks to extend the existing body of Human-Food Interaction (HFI) research. Through scenarios and food-tech prototyping navigated by bespoke Digital Food Cards, we will unpack issues and suggest possible design approaches. We invite proposals from researchers, designers, and other practitioners interested in working towards a complex framework for future HFI research.

**Author Keywords**

human food interaction; digital food cultures; food design; quantified diets; kitchenware; food sharing

**ACM Classification Keywords**

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous

## Introduction

Technology design is increasingly contributing to people's everyday food lifestyles, which raises many opportunities and concerns about the future of food systems. The entanglements of digital technology and food cultures have brought about various types of 'fruit', ranging from community-driven food sharing platforms [10,23] to 700\$ juicers that can squeeze a bag of mashed fruit with almost the same efficiency as a pair of human hands [11]. While claiming that "food is the new internet" [19] food-tech proponents tend to portray technology as a means to revolutionize food systems. On the other hand, critics see such digital food efforts as a prime example of technological solutionism - the undue belief that technology design can fully solve complex societal problems [17,18].

HCI community has addressed the opportunities and limitations of digital technology in everyday food practices under the umbrella framework of Human-Food Interaction (HFI) [1,4,12,13]. For instance, Dolejšová & Kera [8] show positive impacts of diet tracking and data sharing services on users' food literacy but highlight related health safety and data security risks. Lupton & Turner [16] identified the potential of 3D food printing kitchenware in user's playful engagement with personal dietary health, but also its undue distance from present food cultures and users' food routines. Scholars have frequently discussed the positive environmental impacts of digital technology used for the sharing of home cooked meals, seasonal harvest, and food leftovers [4,10,23]. The same food sharing technologies have also been criticized for contributing to the food market fragmentation and for their limited affordances regarding public health safety [23]. Opportunities and limitations of digital systems (e.g., open maps, drones,

mobile apps, IoT sensors) in promoting sustainable behavior have been explored in the context of wild food practices such as foraging, dumpster diving, and food growing [2,6,7,15]. Interactive digital technology was shown to have positive impacts on commensality experiences at a family dinner table [9], while at the same time reinforcing intergenerational gaps regarding digital literacy [3]. Kuznetsov et al. [15] suggested a potential use of digital technology in advancing at-home food science activities such as DIY food fermentation. In contrast, Dolejšová & Kera [7] saw only a peripheral interest of fermentation enthusiasts in using 'hacked' digital gadgets for their DIY food experiments. Although still in its infancy, and without providing firm conclusions, the emerging body of HFI research outlines digital food issues and concerns such as these, and invites further interdisciplinary research.

### *Motivation and Goals*

This workshop seeks to extend the existing body of HFI research by addressing personal, social, environmental, and policy implications of digital technologies used in everyday food practices. More specifically, our focus is on a technology used for:

- **food making** (e.g., 'smart' kitchenware [12,13,16]; AI-based and digitally augmented cookbooks [5,20])
- **diet planning** (e.g., diet tracking devices and personalized nutrition services [8,21])
- **food sharing** (e.g., digital food sharing platforms, open mapping and ubicomp systems [4,7,10,23])
- **dining** (e.g., social dining services and intergenerational interaction at the dinner table [5,9])

- **food play** (e.g., celebratory technology [9,12], food-based games [1])

We will approach these digital food practices as a contested area navigated by multiple stakeholders from corporate and governmental, as well as private and NGO sectors. We are also interested in digital food practices originating from personal interaction between co-located and dispersed parties such as families, friends, neighbors and co-workers. Our aim is to critically unpack issues surrounding digital food technologies and address questions such as: What are the advantages and challenges that digital food technology brings into users' everyday life? How can we design to scaffold the development of playful but also sustainable and just digital food cultures? What issues are faced in contemporary HFI research and how could we address them in the future?

Building on our inaugural SIG CHI meeting at CHI 2017 [13] and subsequent FoodCHI symposium [14], our broad aim is to help nurture the existing research into everyday digital food cultures and develop a strong community of HFI scholars. Our workshop contributes to the nascent HFI research and related HCI inquiries into data-driven health and 'green' lifestyles. We invite interdisciplinary contributions from researchers, designers, food scientists and other practitioners interested in working towards a complex framework for future HFI research. The organizers themselves have very diverse practical and theoretical experiences with the above areas of digital food practices, which will help guide the workshop activities and also drive the participants' selection process.

## **Workshop Themes**

The workshop themes reflect on implications of digital technology utilized for everyday food practices and outline related design challenges. The themes cover (but are not limited to) the following areas:

### **1. Personal implications**

What are the impacts of digital technology on user's food-related literacy? How is digital technology utilized in health and diet self-experimentation? How does technology affect user's emotional relationship with food and eating? How can we design to best support the food-related health and wellbeing of individuals and communities?

### **2. Social and cultural implications**

What changes does technology provide to user's social life and commensality experiences? How does technology affect traditional food practices and culinary techniques? How can we include traditional food knowledge (e.g., fermentation practices) to embrace culturally robust digital food designs? What are the best methods for co-designing technology, which reflects community needs while embracing individual diversity?

### **3. Policy implications**

What kind of data is produced and shared via digital food technology, by whom, and for what ends? Which stakeholders are involved and who is excluded from digital food practices? What are the existing and potential uses of digital technology for food activism? How can design support safe exchanges of personal food-related data?

### **4. Environmental implications**

To what extent can digital technology support sustainable food practices? What are the opportunities of digital technology in advancing user's environmental consciousness? How can we design for playful, but also critical user engagement with sustainable food

practices?

### **Pre-Workshop Plans**

We will ask the potential participants to submit a 2-page position paper in CHI EA format, directly or indirectly addressing the workshop themes. Participants will also be encouraged to bring a working prototype of their digital food designs, if possible. All accepted papers will be placed on the workshop website (<http://datamaterialities.org/chi2018workshop.html>) along with other works related to workshop themes. We will promote the workshop through personal connections, social media, HCI mailing lists, the workshop website, and other relevant channels. We expect to host up to 20 participants.

### **Workshop Structure And Activities**

This full-day workshop will involve a mix of presentations of participants' HFI research followed by group discussions and playful prototyping of various food-tech designs and scenarios. The workshop is broken into six main sessions:

**Session 1 (9am-9:15):** We will start by introducing the workshop themes and agenda for the day.

**Session 2 (9:15-11:15):** Participants will give short five minutes presentations of their proposals, followed by a group discussion on their perspectives on the crossing of food and technology.

**Session 3 (11:15 - 12pm):** Presentations will be followed by a three-minute speed-date session, in which all participants will talk to each other in pairs, giving them the opportunity not only to get to know each other but also to discuss the topics raised in their presentations.

**Session 4 (12-1pm):** Following on from the speed dating, we will have lunch involving various playful,

participatory activities around food. Workshop participants will engage in playful interaction with playful food and technology props brought by organizers. The idea behind this activity is to prompt discussions by taking inspiration from mundane food activities and shared mealtimes.

**Session 5 (1-4pm):** Post lunch, we will continue with small-group activities comprising of scenarios and hands-on prototyping that will be navigated by specially designed **Digital Food Cards**.<sup>1</sup>

The card deck outlines 23 existing as well as anticipated speculative food-tech practices ranging from Urban Foraging, Gut Gardening and Food Gadgeteering to more radical envisionments of food routines adopted by Turing Foodies, Drone Hunters and DNA Diet Fatalists. Instead of suggesting any answers or solutions, the cards raise questions and provoke the players to speculate: What changes does digital technology afford to our everyday food experiences? What opportunities and frictions would technology pose to future food lifestyles? What are the present and near-future Datavore's dilemmas? Would Turing Foodies trust each other? Would Gut Gardener date a Food Psychonaut? Where would a Food NeoPunker and Foodcaster go for a Friday night dinner?

Inspired by a similar card technique used by Vines et al. [22] we hope this ambiguity will provoke playful participant engagement as well as critical reasoning about existing and near-future digital food lifestyles. Participants working in groups will map selected cards on the four main workshop themes and discuss related opportunities and limitations. Each group will be invited to create scenarios addressing the outlined issues and

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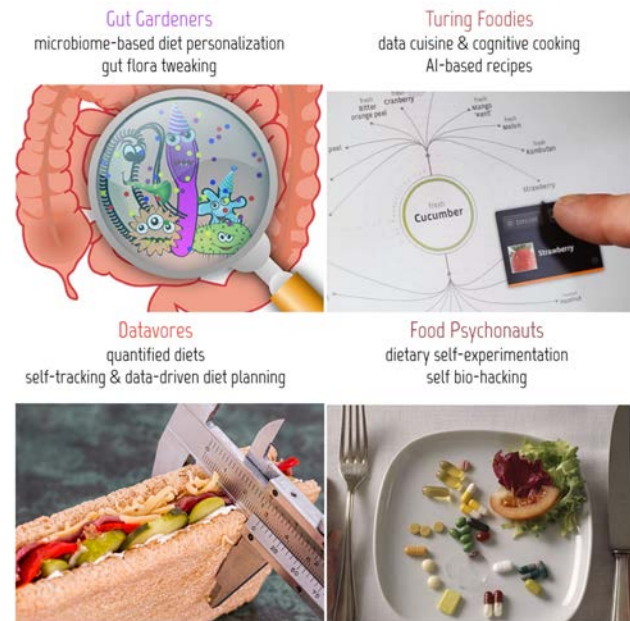
<sup>1</sup> <http://materie.me/digifood>

design 'digital food prototypes' to embody the scenarios in actual (or even edible) form. Food and technology materials for prototyping will be provided by workshop organizers; participants will be invited to bring prototypes and demos of their own digital food designs.

**Session 6 (4-6pm):** We will ask every group to showcase their prototypes and scenarios and outline the design approaches that they have taken. The workshop will be wrapped-up by summarizing preliminary results related to the discussed issues and ideas.



**Figure 1:** Digital Food Cards



**Figure 2:** Digital Food Cards

### Post-Workshop Plans

All accepted submissions would be included in the dedicated workshop proceedings, published as a technical report and placed on the workshop's website. The website will summarize outcomes of the workshop and provide a space for ongoing discussion and sharing of resources even after the workshop concludes. This will comprise of scenarios, prototypes, and other media content created during the workshop to be archived on the website. To document and share the workshop activities in near-real-time, we will use standard social media tools (Twitter, Facebook, Instagram, etc.). The workshop outcomes will be further disseminated among wider audience via a CHI poster presentation. We will

also invite selected participants to contribute towards a special issue on digital food cultures in TOCHI or IJHCS.

### **Organizers**

**Markéta Dolejšová** (the primary contact person for this workshop) is a Ph.D. candidate at the National University of Singapore focusing on socio-technical contexts of digital food lifestyles. Her practice-based research refers to Speculative and Critical Design methodologies that she extends into participatory public engagement events (<http://materie.me>).

**Rohit Ashok Khot** is a VC Postdoctoral fellow in the Exertion Games Lab at RMIT University. Rohit investigates new playful ways of enriching our interactions and association with data using technologies like food printing (<http://datamaterialities.org>).

**Hilary Davis** is a Senior Research Fellow at the Centre for Social Impact, Swinburne University of Technology. Her work investigates the role digital technologies play in people's work, social activities and home lives. She is interested in how digital cookbooks, and digital technologies generally, might impact on intergenerational familial relationships at mealtimes (<http://hilaryjdavis.com/>).

**Hasan Shahid Ferdous** is a research fellow in the Microsoft Research Centre for Social Natural User Interface at University of Melbourne, Australia. His current research focuses on dining experiences and the sociality and interaction among the family members in the shared family space (<http://www.hsferdous.com/>).

**Andrew Quitmeyer** is a Professor at the National University of Singapore. He researches ways to design digital media in natural environments. He is also a proponent of exploring novel food technologies

including digitally enhanced foods and new forms of entomophagy.

### **Call For Participation**

Technology design is increasingly contributing to people's everyday food lifestyles and offers promising yet debatable food futures. Diet-tracking devices, food sharing apps, 'smart' kitchenware and other food-tech create both opportunities and risks related to users health, food literacy, and social life. This workshop addresses present and near-future digital food controversies and seeks to extend the body of Human-Food Interaction (HFI) research. We invite researchers interested in HFI issues to submit position papers reflecting on food-tech implications in following areas:

#### **1. Personal implications**

What are the impacts of digital technology on user's food-related literacy? How can we design to support individual's health and well being?

#### **2. Social and cultural implications**

What changes does technology provide to user's social life and commensality experiences? How can we design to reflect community needs while embracing individual diversity?

#### **3. Policy implications**

What kind of data is produced and shared via digital food technology, by whom, and for what ends? How can design support safe exchanges of personal food-related data?

#### **4. Environmental implications**

To what extent can digital technology support sustainable food practices? How can we design for playful, but also critical user engagement with sustainable food practices?

More info:

<http://datamaterialities.org/chi2018workshop.html>

Proposals (max 2p in CHI EA sent to info[at]datamaterialities.org) will be selected based on originality and relevance to workshop themes. The workshop activities will comprise of scenarios and food-tech prototyping navigated by bespoke Digital Food Cards. Accepted participants will be asked to contribute towards a special issue on digital food in TOCHI or IJHCS. At least one author of each accepted paper must attend the workshop.

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