

# **Part1: Food Computing**

## What is Food?

Food is any substance consumed to provide nutritional support for an organism. **Food is usually of plant or animal origin**, and contains essential nutrients, such as carbohydrates, fats, proteins, vitamins, or minerals.

-Wikipedia

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Any nourishing substance **that is eaten, drunk**, or otherwise taken into the body to sustain life, provide energy, promote growth, etc. -dictionary.com

## What is Food?

## Various types of food



Dish



**Fruit** 



**Meat/Fresh food** 



Grocery





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Vegetable

# Food is important

Food is essential for human life and fundamental to human experience



Basic condition for human survival, reproduction, maintaining health

Meet human needs with different levels

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The research on food in health, agriculture and other related fields have been widely explored



#### Food Perception Primes Hepatic ER Homeostasis via Melanocortin-Dependent Control of mTOR Activation

Claus Brandt,<sup>1,2,3</sup> Hendrik Nolte,<sup>3,4</sup> Sinika Henschke,<sup>1,2,3</sup> Linda Engström Ruud,<sup>1,2,3</sup> Motoharu Awaz <del>在,123</del> 開带你读文献 Donald A. Morgan,<sup>5</sup> Paula Gabel,<sup>1,2,3</sup> Hans-Georg Sprenger,<sup>4</sup> Martin E. Hess,<sup>1,2,3</sup> Stefan Günther,<sup>6</sup> Thomas Langer,<sup>4,7</sup> Kamal Rahmouni,<sup>5</sup> Henning Fenselau,<sup>2,3,8</sup> Marcus Krüger,<sup>3,4</sup> and Jens C. Brüning<sup>1,2,3,9,10,\*</sup>

## THE LANCET

#### Food in the Anthropocene: the EAT-*Lancet* Commis healthy diets from sustainable food systems

Walter Willett, Johan Rockström, Brent Loken, Marco Springmann, Tim Lang, Sonja Vermeulen, Tara Garnett, David Tilman, Amanda Wood, Malin Jonell, Michael Clark, Line J Gordon, Jessica Fanzo, Corinna Hawkes, Rami Zurayk, Juan A Rivera, Wim Lindiwe Majele Sibanda, Ashkan Afshin, Abhishek Chaudhary, Mario Herrero, Rina Agustina, Francesco Branca, Anna Larter Beatrice Crona, Elizabeth Fox, Victoria Bignet, Max Troell, Therese Lindahl, Sudhvir Singh, Sarah E Cornell, K Srinath Reddy, S Sania Nishtar, Christopher J L Murray



## nature food

Food systems battleg

#### Perspective | 09 December 2019 The unmapped chemical complexity of our diet

Advances such as machine learning may enable the Article | 17 June 2020

#### Dietary metabotype modelling predicts individual responses to dietary interventions

Variability in the individual response to dietary interventions has been reported. Here a Dietary Metabotype... show more

Isabel Garcia-Perez, Joram M. Posma [...] Gary Frost

### mature plants

#### Article | Published: 29 July 2019

Non-invasive plant disease diagnostics enabled by smartphone-based fingerprinting of leaf volatiles



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# The research on food in health, agriculture and other related fields have been widely explored



IEEE Trans. PAMI	
IEEE Trans. Industrial Informatics	
≻ IEEE Trans. IP	> CVPR
IEEE Trans. CB	> ICCV
➤ IEEE Trans. MM	> AAAI
IEEE Trans CSVT	> IJCAI
FEEL France Cover FEEL Journal of Biomedical and Health Informatics	> CHI
IEEE Journal of Diomedical and meaning matters IEEE Internet of Things Journal	≻ KDD
	≻ ICMR
> ACM TOMM	➤ ICASSP
Journal of Medical Internet Research	
Trends in Food Science & Technology	

Existing research is relatively scattered and lacks systemic study

## **Food Computing Framework**



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# **Food Computing Framework**



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## Definition



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