Multisensory Experiences: *Where the Senses Meet Technology*

Professor Marianna Obrist

29 April 2026

Multi-Sensory Devices (MSD) Group | UCL Computer Science
Co-Founder & Chief Scientific Officer | **Hynt Labs Limited**



- Professor of Multisensory Interfaces at the UCL Department of Computer Science
  - Multi-Sensory Devices (MSD) Research Group & UCL Interaction Centre (UCLIC)

UCL Multi-Sensory Devices

UCLIC

- Co-founder and CSO (Chief Scientific Officer) of Hynt Labs Limited
  - University spin-out developing digital scent technology, first go to market is Sleep Tech

Hynt

hynt.net

Multisensory Human–Computer Interaction (HCI)







Thanks to early and key supporters and funders:

MARIE CURIE ACTIONS

erc European Research Council Established by the European Commission

Royal Academy of Engineering

UKRI Engineering and Physical Sciences Research Council

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UCL

Multi-Sensory Devices (MSD) Research Group Ethos: “Full-stack development of interactive multisensory interfaces, from fundamental physics to end user perception and experiences”

Human factors User Experience



Marianna Obrist
Multisensory experiences, smell and taste interfaces



Diego Martinez Plasencia
Multimodal interfaces 3D displays and novel interaction techniques



Akin Delibasi
Distributed and embedded systems, Control engineering, Internet of things



Sriram Subramanian
RAEng Chair
Sound modulator, Physical models Emerging Tech.



Elia Gatti
Text-To-Speech Technology, cognition and perception, XR interactions



Jagmohan Chauhan
Intelligent sensing, GenAI, trustworthy machine learning systems



Ryuji Hirayama
Display & Fabrication Acoustic manipula-tion, Multi-modal display



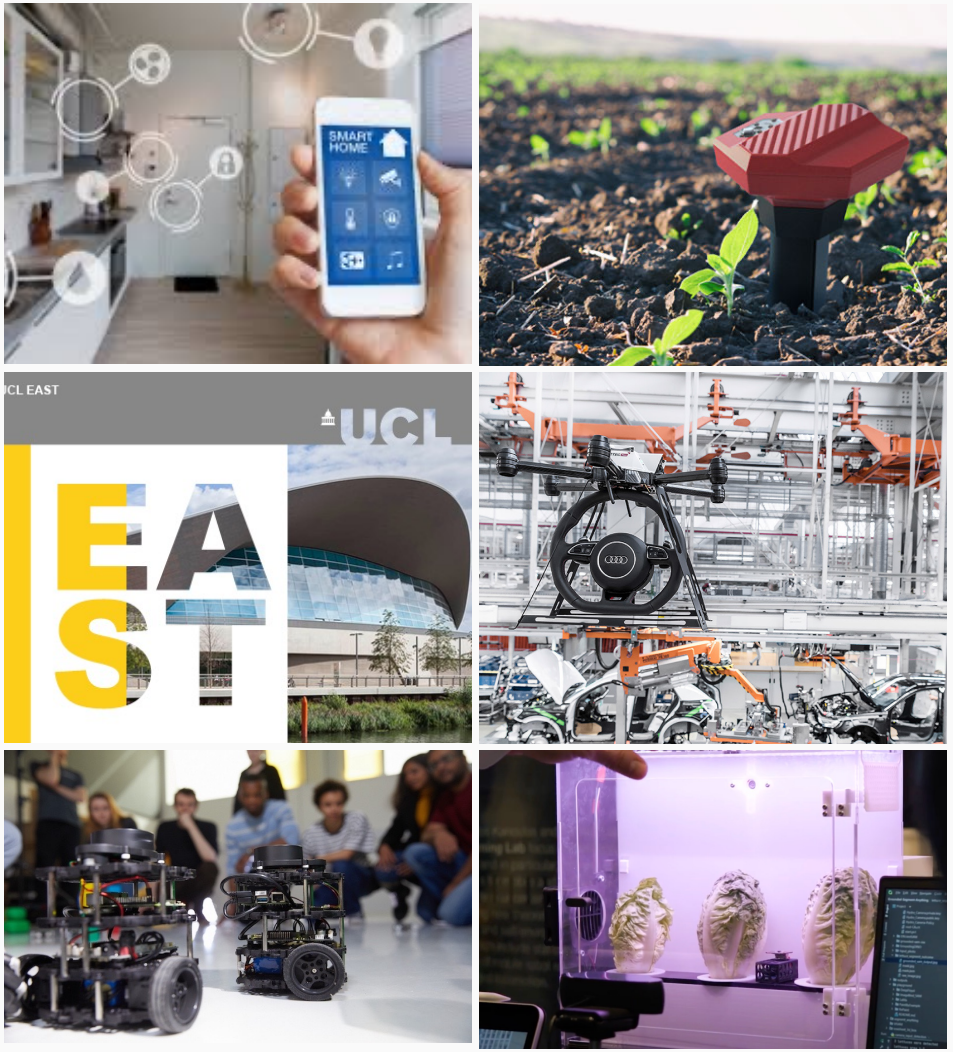
Zhibin (Alex) Li
Robotics & AI
multi-agent learning physical interactions

Engineering Physical Sciences

MSD Group MSc program:

“Systems Engineering for the Internet of Things (IoT)”

- Introduces hardware and algorithms of engineering IoT systems in real-world settings.
- Provides the and socio-technical aspects related to designing and deploying IoT systems in the real-world.
- Since Sept 2023 @ UCL East!



Key Enabling Multi-Sensory Devices @MSD Group

ultraleap



https://www.ultraleap.com/

Hynt



https://www.hynt.net/

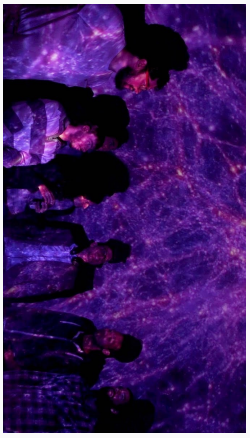
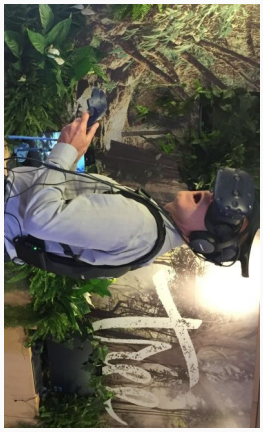
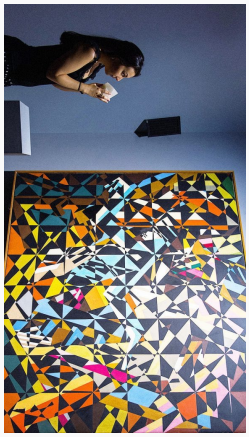
AcoustoFab



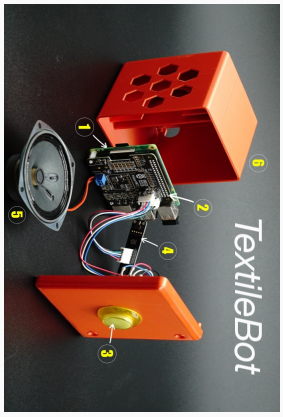
https://acoustofab.co.uk/

UCL

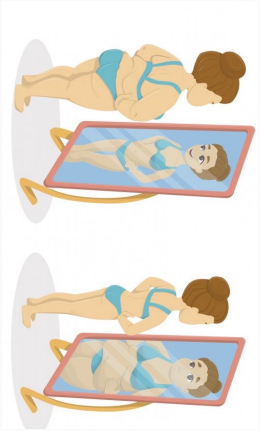
Immersive Experiences

Interactive Applications

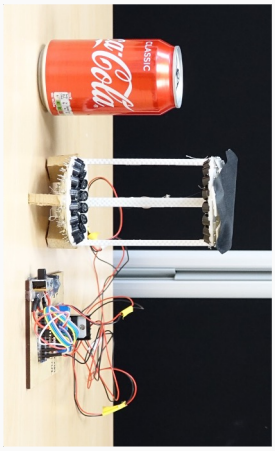


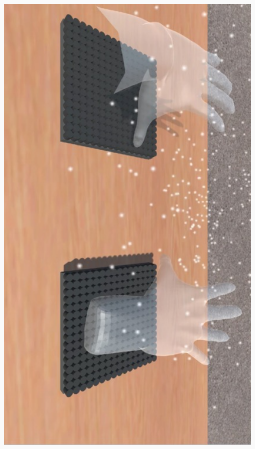




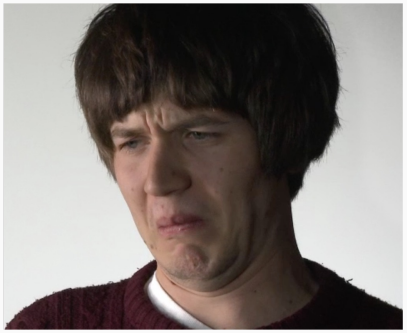

Novel Sensory Interfaces

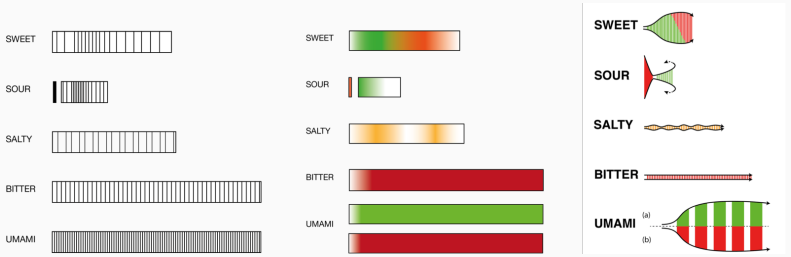


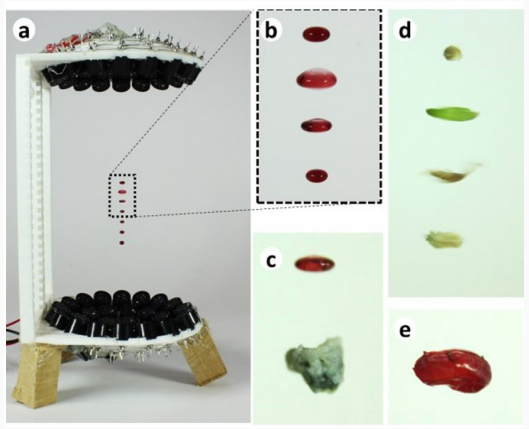


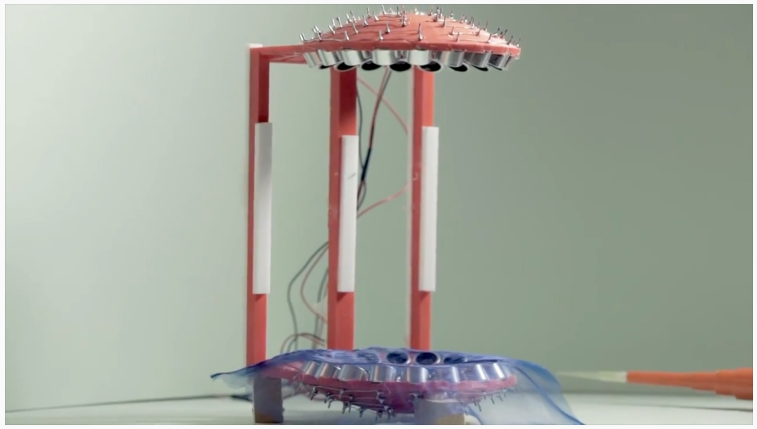






Temporal, affective, and embodied characteristics of taste experiences: a framework for design. (Obrist M. et al. 2014, *CHI'14).*







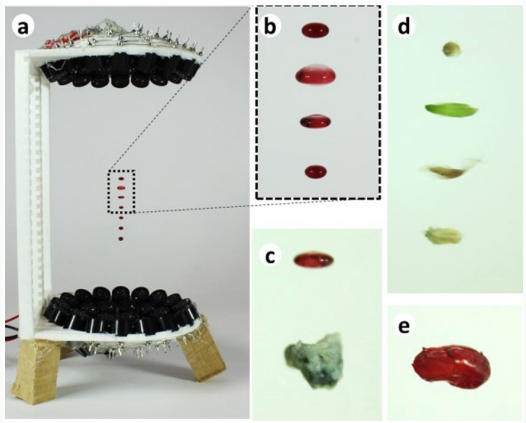


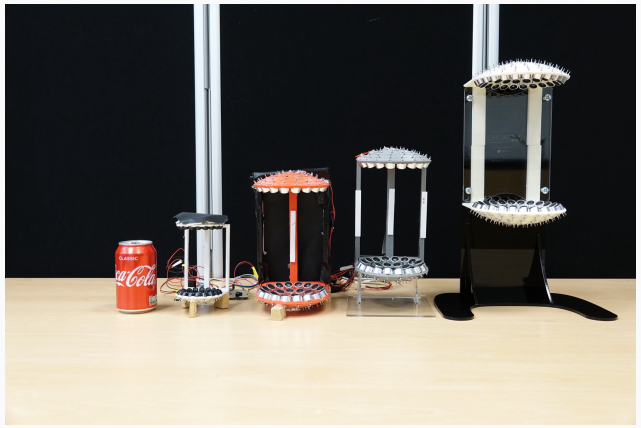


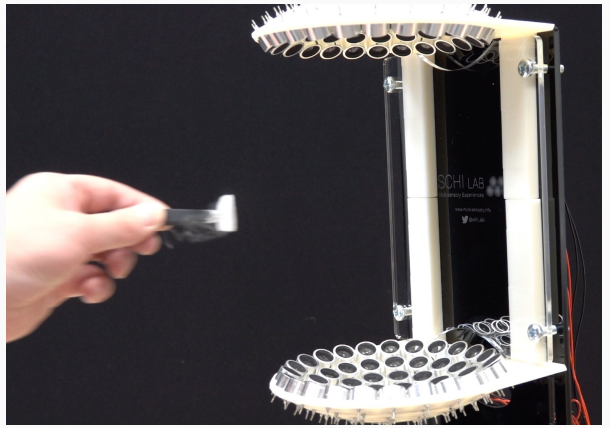
TastyFloats: A contactless food delivery system (Vi, C.T. et al. 2017, *ISS*)

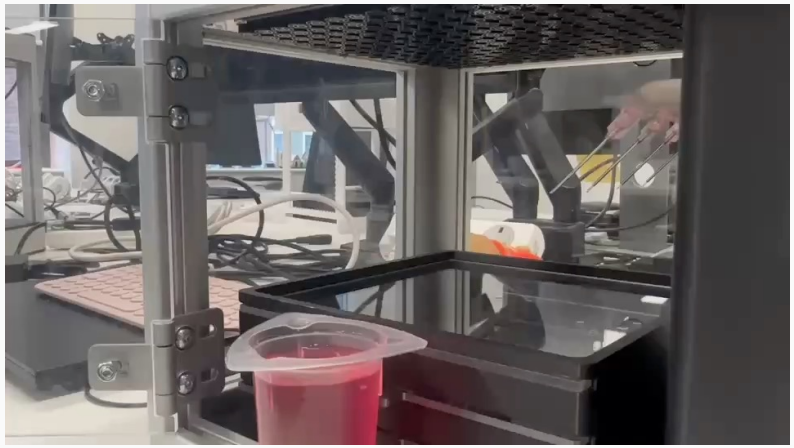
LeviSense: A platform for the multisensory integration in levitating food and insights into its effect on flavour perception (Vi, C.T. et al. 2020, *IHJCS*)

Evolution of taste delivery and control

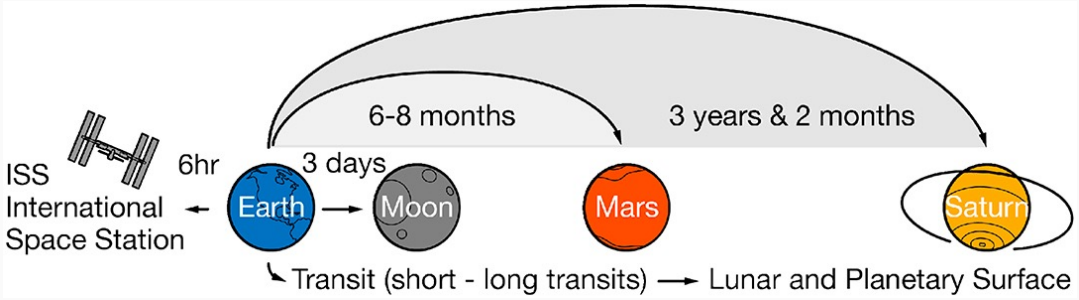


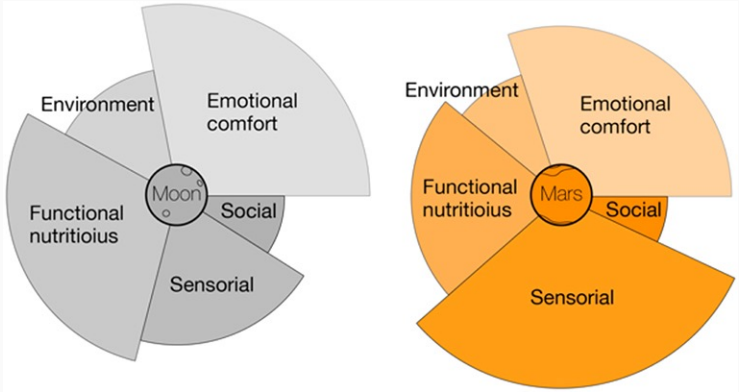




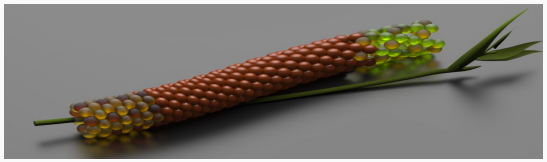


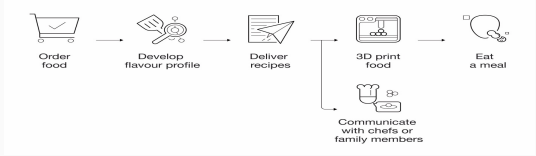
2023 spin-out
AcoustoFab

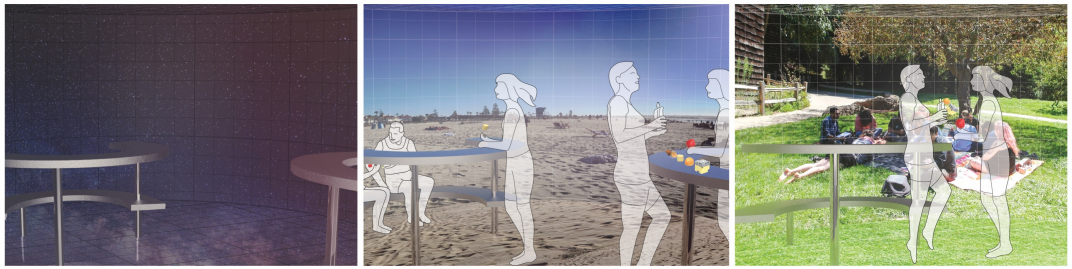










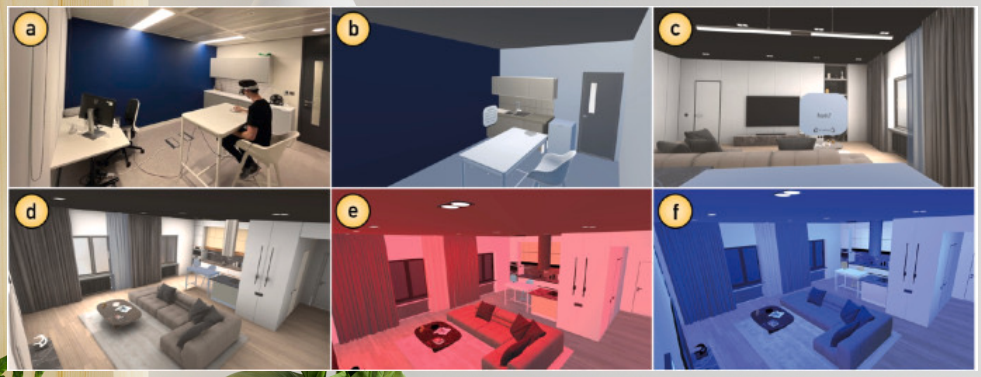




Space Food Experiences: Designing Passenger's Eating Experiences for Future Space Travel Scenarios (Obrist M. et al. 2019, *Frontiers in Computer Science).*

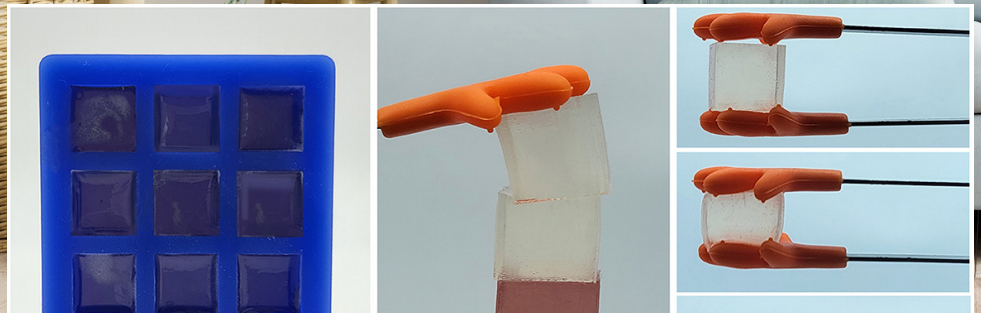
Eating in VR | effect of ambient lights and food shapes on taste/ flavour perception based on crossmodal correspondences

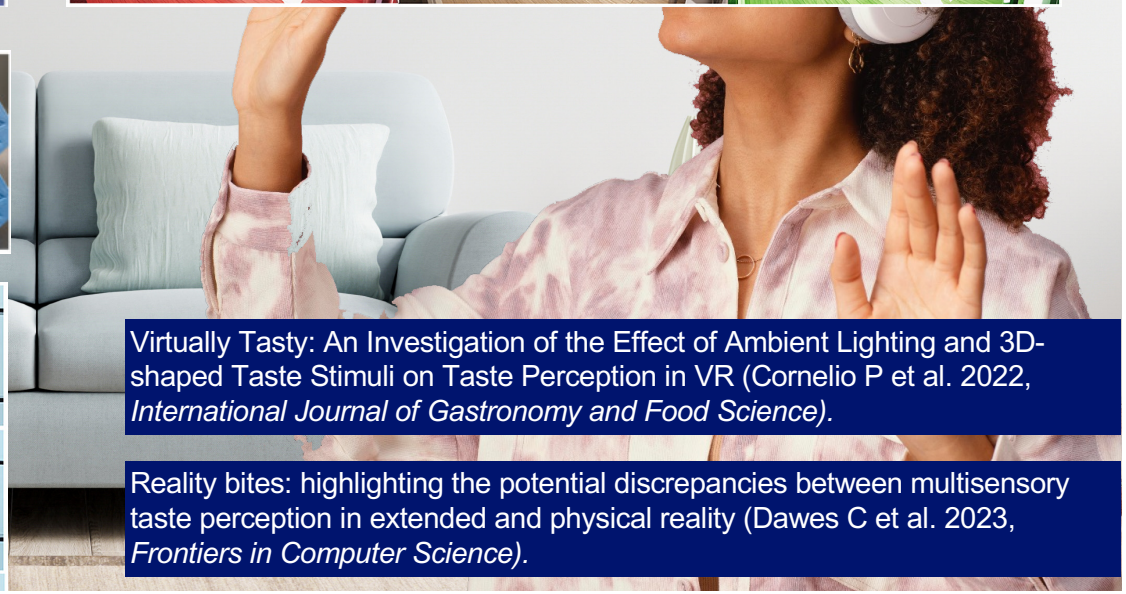
SONY









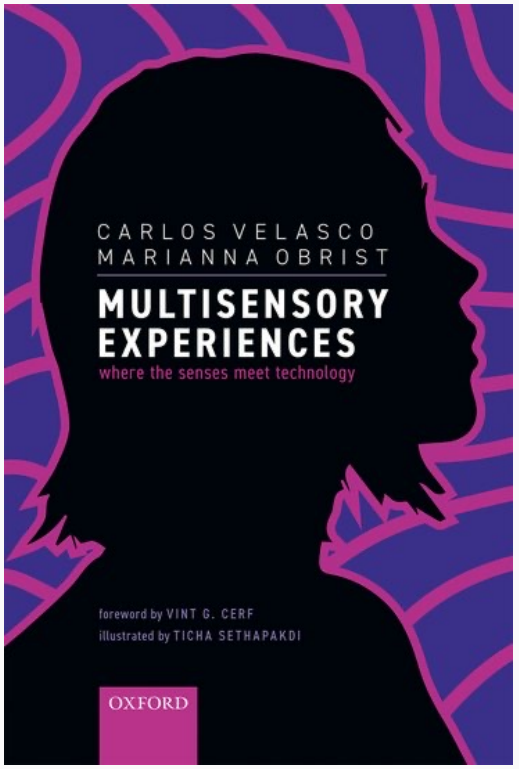


Virtually Tasty: An Investigation of the Effect of Ambient Lighting and 3D-shaped Taste Stimuli on Taste Perception in VR (Cornelio P et al. 2022, *International Journal of Gastronomy and Food Science).*

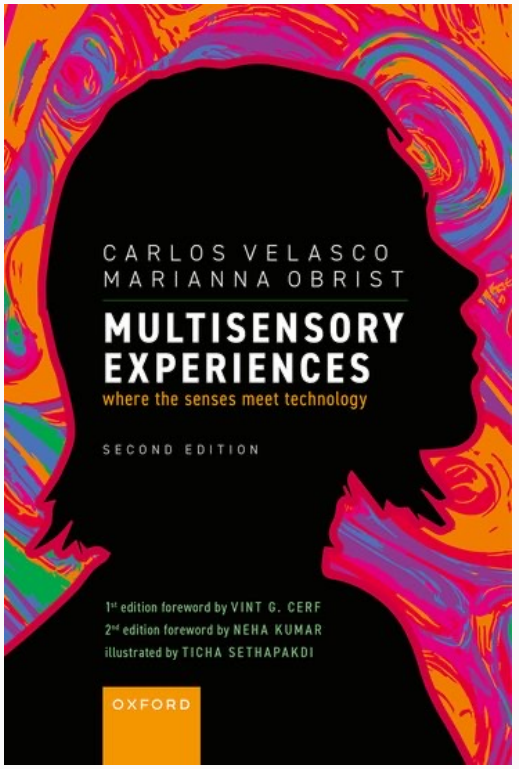
Reality bites: highlighting the potential discrepancies between multisensory taste perception in extended and physical reality (Dawes C et al. 2023, *Frontiers in Computer Science).*

Find more examples of multisensory technologies, key concepts, and a reflection on the opportunities and challenges of the future of multisensory experiences in our book.

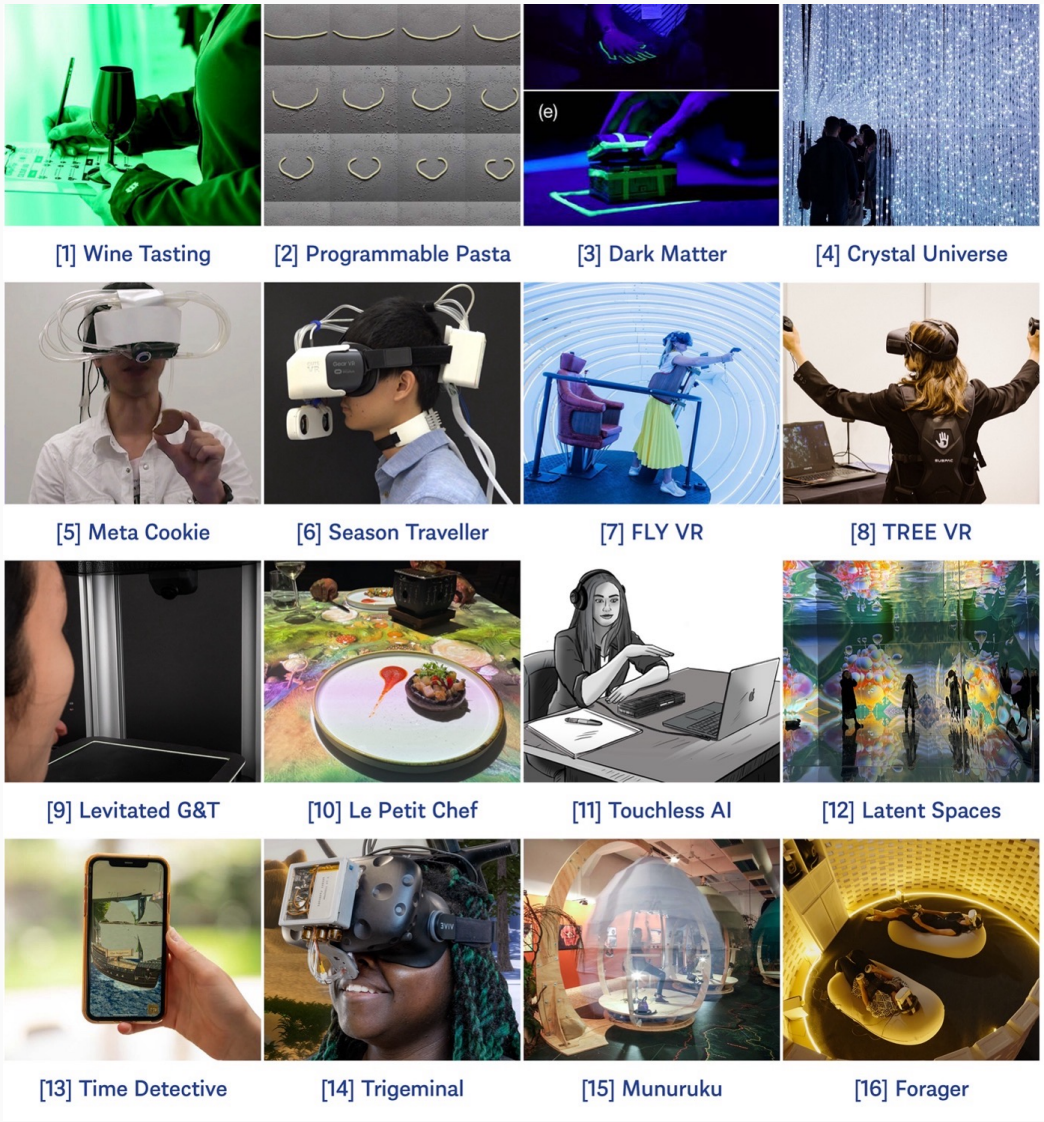
Velasco & Obrist

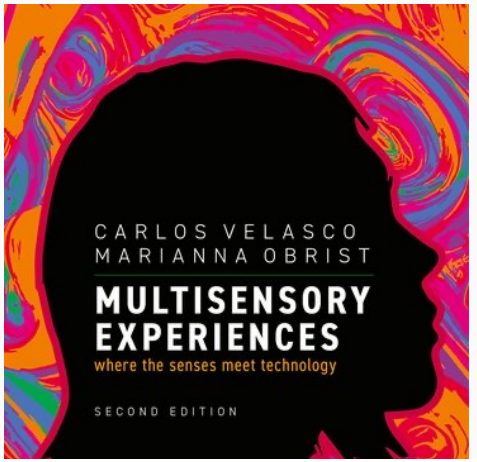


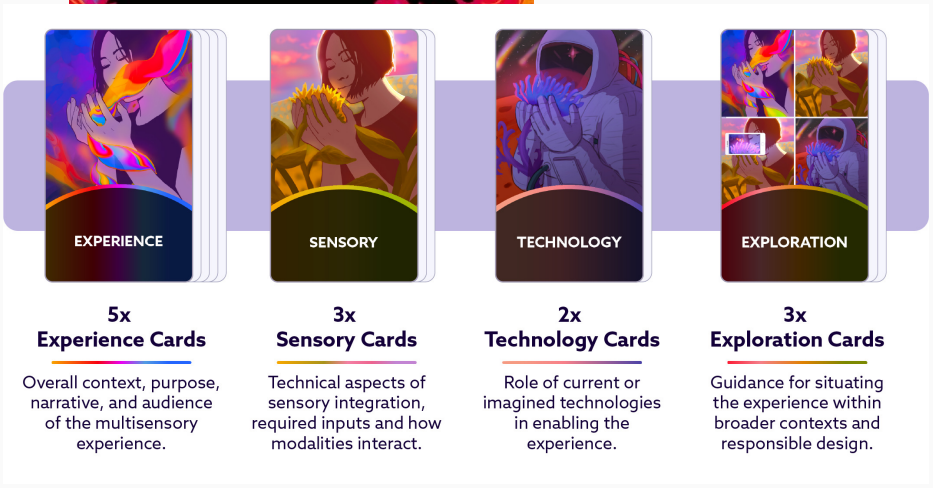
1st Edition
2020



2nd Edition
2025



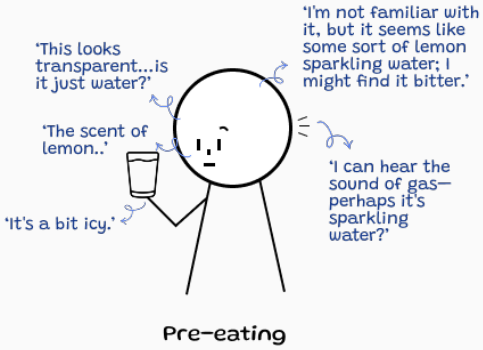


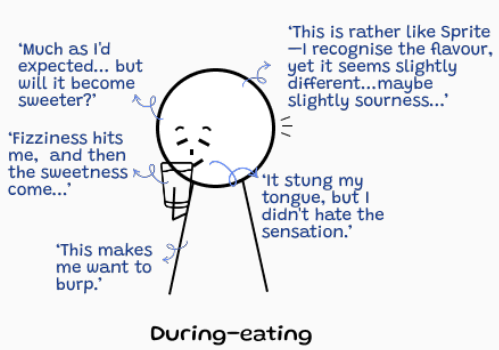


Download xSense Design Cards:
www.multisensoryexperiences.co.uk/

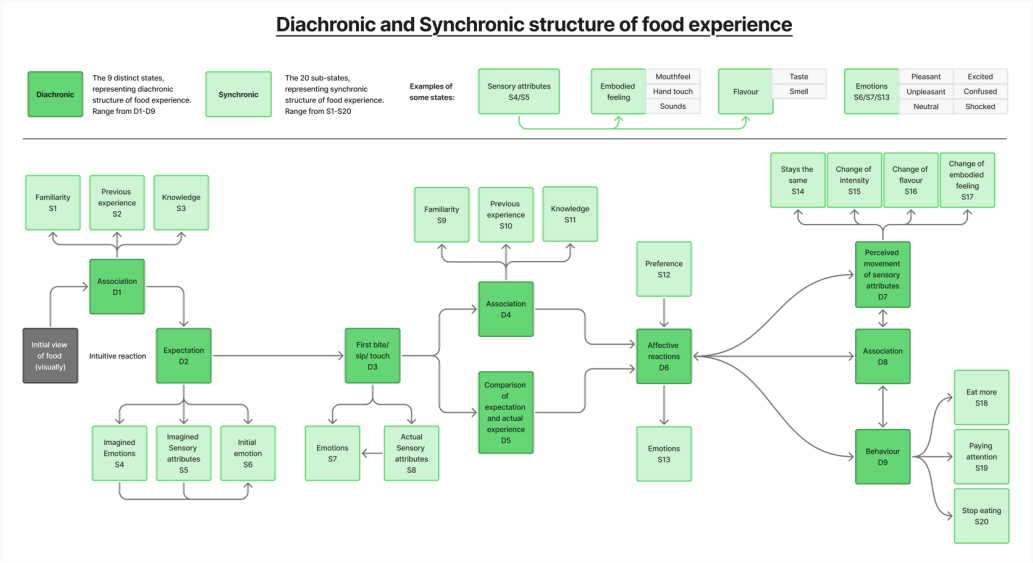
UCL

How do we talk about taste/food experiences?











Yihan Kang

UCL CS PhD Student
Multisensory Food Experiences

yihan.kang.22@ucl.ac.uk

Speaking of Food: Understanding How People Talk About Food Experiences. (Kang Y. et al. 2026, *Proceedings of the 2026 CHI Conference on Human Factors in Computing Systems (CHI '26)*).

What We Talk about when We Talk about Food Experiences. (Kang Y. et al. 2025, *Proceedings of the 1st International Workshop on Multi-modal Food Computing (MMFood '25)*).

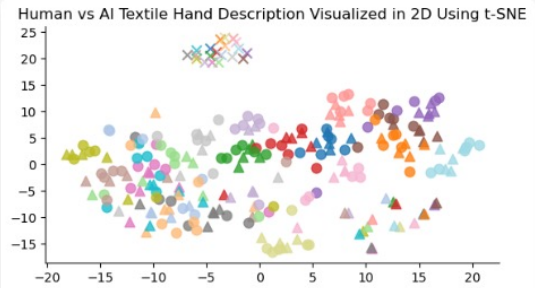
Cross-modality & AI for Taste/food experiences



Shu Zhong

UCL CS PhD Student
Perceptual Alignment in Human-centred AI

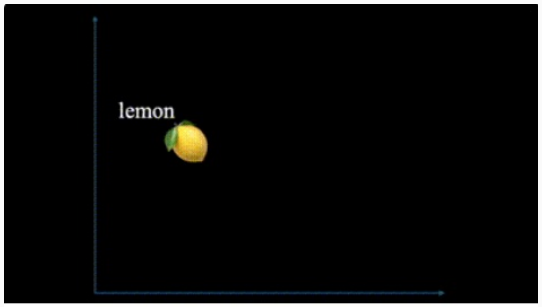
shu.zhong.21@ucl.ac.uk
@hahashu



AI learns to touch 👋🧣

Exploring Human-AI Perception Alignment in touch Experiences

TouchAI: Exploring human–AI perceptual alignment in touch through language model representations. (Zhong, S., et al. 2026, *International Journal of Human-Computer Studies).*



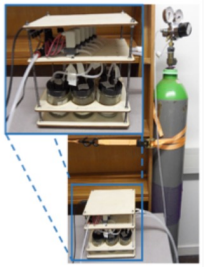
Sniff AI 💨👃

Is My 'Spicy' Your 'Spicy'? Perceptual alignment in olfactory

SniffAI: Is my'spicy'your'spicy'? exploring llm's perceptual alignment with human smell experiences. (Zhong, S., et al. 2024). arXiv preprint arXiv:2411.06950.



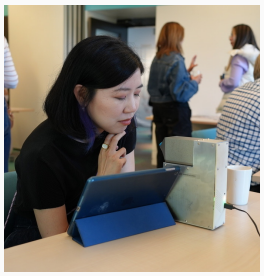
Evolution of smell delivery and control

















Fly VR
Picture this Production



Forager VR
New Reality Co



Time Detectives AR
Picture this Production



Little Ant Kingdom
Science Centre Singapore

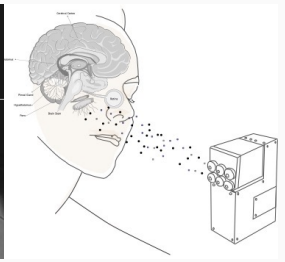


Smell Training
www.smell-care.co.uk

OWidgets: A toolkit to enable smell-based experience design (Maggioni, E. et al. 2019, International Journal of Human-Computer Studies, V 130).

Multi-channel portable odor delivery device for self-administered and rapid smell testing (Hopper, R. et al. 2024, Nature Communications Engineering, 3(1), 141).





2019 spin-out

Hynt

UCL

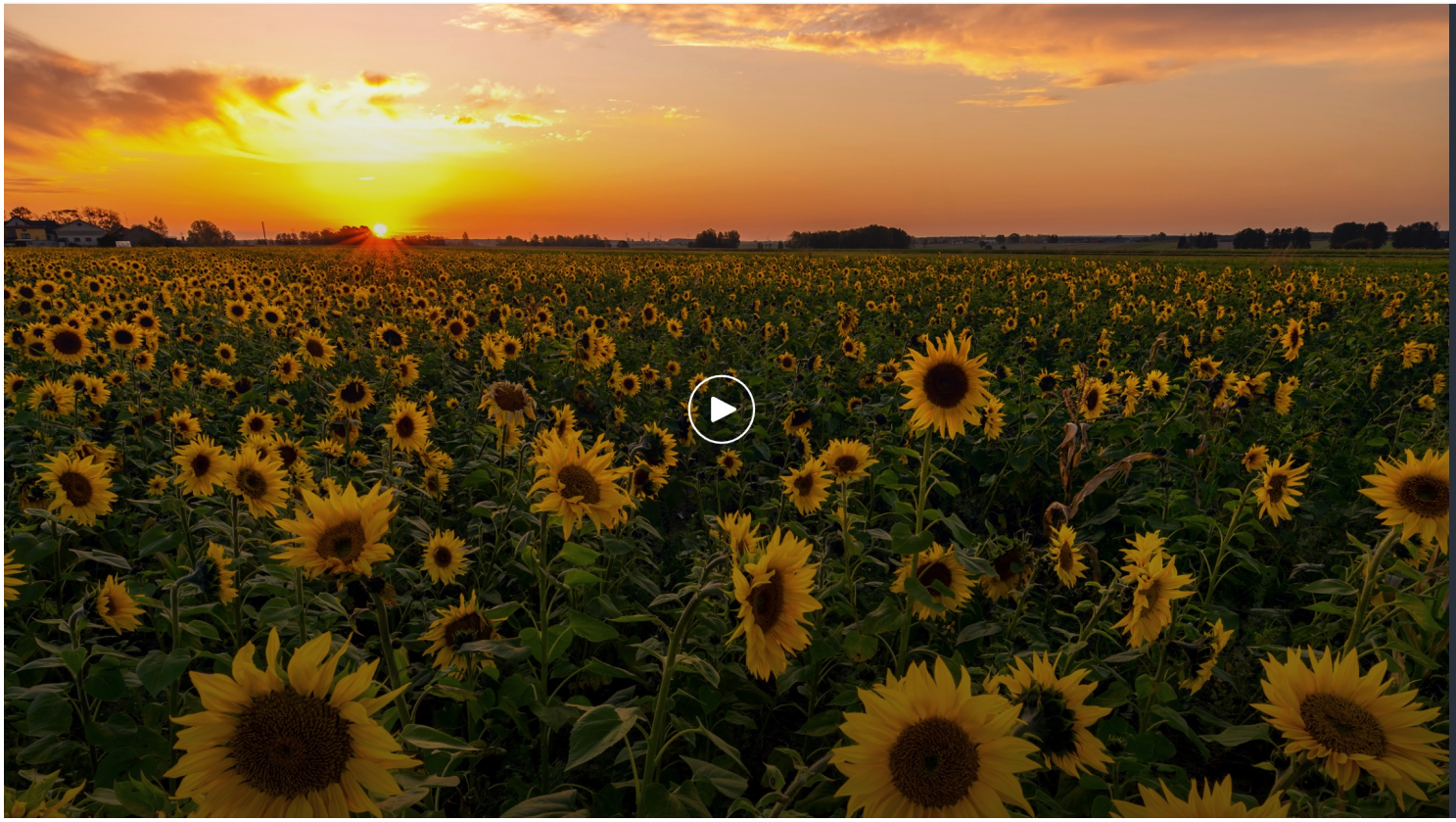
For Multisensory HCI – much remains to be understood and studied, from multisensory integration to subjective experiences, and sensory–technical alignment.







COMMUNICATIONS OF THE ACM



Research and Advances Mar 21 2025

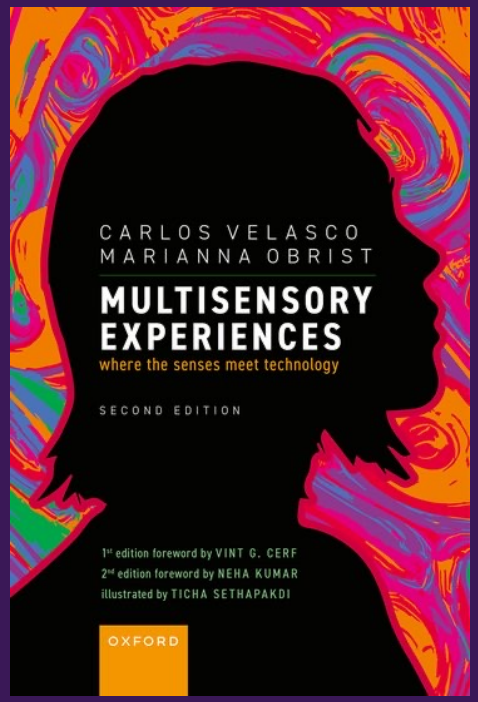
Multisensory Experiences: Formation, Realization, and Responsibilities

Sensory manipulation, privacy, and other ethical considerations must be carefully addressed as technology-enabled multisensory experiences evolve.

Marianna Obrist and Carlos Velasco

HCI

Marianna Obrist and Carlos Velasco. 2025. Multisensory Experiences: Formation, Realization, and Responsibilities. *Commun. ACM Online First* (March 2025). https://doi.org/10.1145/3699594



www.multisensoryexperiences.co.uk/

Thanks!
Questions?

Prof Marianna Obrist
Email: m.obrist@ucl.ac.uk