



Virtual Reality Electronic Tongue: Taste Cake Simulation Experience

Description

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A new electronic tongue can copy flavors like cake and fish soup. It helps create virtual food experiences but can't replicate smells that are also important for taste.

Scientists at The Ohio State University created e-Taste, a system that can analyze a food's taste and partly recreate it in a person's mouth. They use chemicals for salty, sour, sweet, bitter, and umami taste.

The system identifies the levels of these chemicals in food and turns them into digital signals. Then it sends these signals to a pump, which releases small amounts of flavor-containing gels under a person's tongue.

The system was tested with single flavors and complex tastes like lemonade and cake. People could tell the difference between these flavors most of the time. However, the system cannot replicate taste as accurately as a human tongue because taste also involves smell and other senses.

Topics:

Vocabulary List:

1. **Flavors** /'fleɪ.vər/ (noun): Distinctive tastes that can be detected by the tongue.
2. **Replica** /'rɛp.lɪ.kə/ (noun): An exact copy or reproduction of something.
3. **Analyze** /'æn.ə.laɪz/ (verb): To examine something in detail for purposes of explanation and interpretation.
4. **Complex** /'kɒm.pleks/ (adjective): Consisting of many different and connected parts.
5. **Chemicals** /'kem.ɪ.kəl/ (noun): Substances with a distinct molecular composition that are used in or produced by chemical processes.
6. **Experiences** /ɪk'spɪə.ri.ən.sɪz/ (noun): Practical contact with and observation of facts or events.

Comprehension Questions

Multiple Choice

1. What can the new electronic tongue copy flavors of?

- Option: Cakes and fish soup
- Option: Breads and vegetables
- Option: Cookies and chicken
- Option: Ice cream and burgers

2. Which university developed the e-Taste system?



- Option: Harvard University
- Option: University of California
- Option: The Ohio State University
- Option: Stanford University

3. What are the chemicals used by the e-Taste system for taste analysis?

- Option: Salty, bitter, spicy, tangy
- Option: Sour, umami, savory, creamy
- Option: Salty, sour, sweet, bitter, umami
- Option: Sweet, salty, sour, caramel

4. What sends signals to release flavor-containing gels under a person's tongue?

- Option: Sensor
- Option: Microchip
- Option: Pump
- Option: Chemical dispenser

5. How were people able to differentiate between flavors in the system test?

- Option: By smell alone
- Option: By sight only
- Option: By taste and touch
- Option: By taste predominately

6. Why can't the e-Taste system replicate taste as accurately as a human tongue?

- Option: Lack of advanced technology
- Option: Inability to analyze all taste components
- Option: Excessive reliance on digital signals
- Option: Insufficient flavor-containing gels

True-False

- 7. The e-Taste system can replicate smells accurately as a human's sense of smell.
- 8. The e-Taste system was only tested with single flavors.
- 9. The system created by The Ohio State University is called e-Flavor.
- 10. The e-Taste system was developed primarily for medical purposes.



11. The e-Taste system sends digital signals directly to a person's brain.
12. The e-Taste system uses gels to deliver flavors under a person's tongue.

Gap-Fill

13. The e-Taste system identifies the levels of chemicals in food and turns them into _____ signals.
14. The e-Taste system was developed by scientists at The Ohio State University, not by _____ institution.
15. The e-Taste system release small amounts of flavor-containing gels under a person's _____ .
16. The e-Taste system was created to partly recreate a food's taste in a person's _____ .
17. The e-Taste system could not replicate taste as accurately as a human tongue due to the involvement of _____ and other senses.
18. The e-Taste system can copy various tastes including salty, sour, sweet, bitter, and _____ .

Answer

Multiple Choice: 1. Cakes and fish soup 2. The Ohio State University 3. Salty, sour, sweet, bitter, umami
4. Pump 5. By taste predominately 6. Taste also involves smell and other senses
True-False: 7. False 8. False 9. False 10. False 11. False 12. True
Gap-Fill: 13. digital 14. another 15. tongue 16. mouth 17. smell 18. umami

Vocabulary quizzes



Multiple Choice (Select the Correct answer for each question.)

1. What is the emotion when one feels in danger or at risk?
Option: A. Joyful
Option: B. Threatened
Option: C. Peaceful
Option: D. Excited
2. Which word describes something consisting of many different and connected parts?
Option: A. Simple
Option: B. Complex
Option: C. Basic
Option: D. Uncomplicated
3. What term is used for the process of developing industries in a country or region on a wide scale?
Option: A. Rural
Option: B. Developed
Option: C. Industrialized
Option: D. Agricultural
4. Which word describes the influence or effect of one thing on another?
Option: A. Unnoticed
Option: B. Neglected
Option: C. Impact
Option: D. Avoided
5. What is the term for assistance or encouragement given to someone or something?
Option: A. Unaided
Option: B. Unsupportive
Option: C. Supportive
Option: D. Abandoned
6. What is a repeated decorative design?
Option: A. Random
Option: B. Plain
Option: C. Pattern
Option: D. Dull
7. Which term refers to the standard or degree of excellence of something?
Option: A. Inferiority
Option: B. Substandard
Option: C. Quality



Option: D. Poor

8. Who are the individuals or businesses who purchase goods or services from a store or business?

Option: A. Buyers

Option: B. Customers

Option: C. Window-shoppers

Option: D. Sellers

9. What is the action of moving something or someone from one place to another?

Option: A. Stillness

Option: B. Transfer

Option: C. Fixed

Option: D. Static

10. Which word means to express complete disapproval of something or someone?

Option: A. Praised

Option: B. Condemned

Option: C. Applauded

Option: D. Commended

Gap-Fill (Fill in the blanks with the correct word from the vocabulary list.)

11. We learn valuable lessons from our _____ both good and bad.

12. It is important to address _____ promptly to prevent them from escalating.

13. The company announced the _____ of several employees due to restructuring.

14. Expressing _____ towards others can have a positive impact on relationships.

15. Employees are provided with secure _____ to company data to ensure confidentiality.

16. The ice cream parlor offers a variety of _____ to cater to different tastes.

17. The museum displayed a perfect _____ of an ancient artifact.

18. The art expert examined the painting to determine its _____.

19. _____ are constantly exploring new frontiers in science and technology.



20. Increasing _____ about environmental issues is crucial for sustainable living.

Matching Sentences (Match each definition to the correct word from the vocabulary list.)

21. The job role requires a high level of expertise in dealing with complex systems and processes.
22. Cultural norms and values vary across different regions and around the world.
23. It is important to critically examine data and information to draw meaningful conclusions.
24. The organization provides resources and assistance to help those in need.
25. The CEO decided to step down from his position due to personal reasons.
26. The new policy was heavily scrutinized and faced backlash from various stakeholders.
27. Innovation can traditional industries and create new market opportunities.
28. The pandemic had a significant on global economies.
29. Recognizing one's can boost confidence and motivation.
30. Safety protocols are in place to handle hazardous in the laboratory.

Answer

Multiple Choice: 1. B. Threatened 2. B. Complex 3. C. Industrialized 4. C. Impact 5. C. Supportive 6. C. Pattern 7. C. Quality 8. B. Customers 9. B. Transfer 10. B. Condemned

Gap-Fill: 11. experiences 12. issues 13. terminations 14. gratitude 15. access 16. flavors 17. replica 18. authenticity 19. Researchers 20. awareness

Matching sentence: 1. Technical 2. Societies 3. Analyze 4. Support 5. Resign 6. Criticized 7. Disrupt 8. Impact 9. Accomplishments 10. Chemicals

CATEGORY

1. Sci/Tech - LEVEL2

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