ASSIGNMENT

Problem Statement: To make targeted improvements in product formulation and flavor profiles by analyzing sensory data, ingredient compositions, and consumer feedback to identify key variables affecting taste in Food and Beverage Industry.

Feature Engineering:

Features Created for the above Problem Statement:

1. Ingredient composition

2. Cooking time and temperature

3. Salt content

4. Sweetness level

5. Umami intensity

6. Spices and herbs

7. Texture and mouthfeel

8. Fat content

9. Acidity level

10. Cooking method

11. Presentation and aesthetics

12. Serving temperature

13. Food freshness

14. Cultural influences

15. Dietary restrictions

16. Processing techniques

17. Seasonal variations

18. Proportion of ingredients

19. Flavor balancing

20. Food pairing

21. Smell and aroma

22. Cooking oil used

23. Food origin and source

24. Food additives

25. Cooking utensils/materials

26. Water quality

27. pH level

28. Cooking environment

29. Personal preferences

30. Food appearance and color

Extracted Features After performing Feature Engineering(feature selection , feature transformation , feature creation and feature extraction):

Flavor Intensity: A combination of sweetness, saltiness, and umami

intensity.

Texture Complexity: Reflecting the diversity and complexity of textures in the dish.

Spice Profile: A representation of the types and quantities of spices used.

Freshness Index: Incorporating factors like ingredient freshness and overall dish freshness.

Culinary Technique Score: Evaluating the impact of cooking methods on taste.

Aroma Richness: Measuring the richness and complexity of the dish's aroma.

These **six features** capture essential aspects of taste, texture, freshness, culinary techniques, and aroma, providing a more focused set for analysis.

Explanation:

Flavor Intensity: This feature combines sweetness, saltiness, and umami intensity to provide a comprehensive measure of the overall flavor strength in a dish.

Texture Complexity: Reflects the diversity and complexity of textures present in the food, capturing the interplay between various textures and their impact on taste.

Spice Profile: Represents the types and quantities of spices used in the dish, encapsulating the unique flavor characteristics contributed by the spices.

Freshness Index: Incorporates factors related to ingredient freshness and overall dish freshness, acknowledging the importance of using fresh ingredients in enhancing taste.

Culinary Technique Score: Evaluates the impact of various cooking

methods on the taste, recognizing the influence of techniques such as grilling, roasting, or steaming.

Aroma Richness: Measures the richness and complexity of the dish's aroma, capturing the aromatic elements that significantly contribute to the overall taste experience.

By focusing on these **six features**, we aim to simplify the representation of taste while retaining key aspects related to flavor, texture, freshness, cooking techniques, spices, and aroma. This streamlined set of features provides a more manageable and targeted approach for further analysis in the context of food taste.

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