Columbia Ops Consulting

Estimating Food Product Composition Based on Regulatory (Nutrition Facts) Labels

Azul Advisory

KEARNEY

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3. Approach
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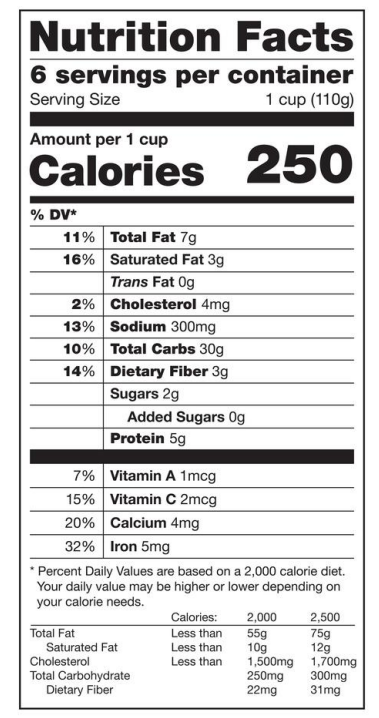
Project 1: Estimating Food Product Composition Based on Regulatory (Nutrition Facts) Labels

Project Deliverables

- Create an algorithmic system to analyze nutrition facts labels to determine the ratio of ingredients
  - Train the system based on known recipes to develop confidence of likely ratio
  - System should be able to propose ideal or alternative formulations based on aggregated data
- System should ideally be able to convert photos to text and pull relevant information in-context

- Primary focus is to deliver a useful tool – interface should not rely on user knowledge of the back-end or programming language
- Some form of user interface is required



Nutrition Facts

6 servings per container

Serving Size 1 cup (110g)

Amount per 1 cup

Calories 250

% DV*	
11%	**Total Fat** 7g
16%	Saturated Fat 3g
	Trans Fat 0g
2%	**Cholesterol** 4mg
13%	**Sodium** 300mg
10%	**Total Carbs** 30g
14%	**Dietary Fiber** 3g
	Sugars 2g
	Added Sugars 0g
	Protein 5g
7%	**Vitamin A** 1mcg
15%	**Vitamin C** 2mcg
20%	**Calcium** 4mg
32%	**Iron** 5mg

* Percent Daily Values are based on a 2,000 calorie diet. Your daily value may be higher or lower depending on your calorie needs.

	Calories:	2,000	2,500
Total Fat	Less than	55g	75g
Saturated Fat	Less than	10g	12g
Cholesterol	Less than	1,500mg	1,700mg
Total Carbohydrate		250mg	300mg
Dietary Fiber		22mg	31mg

Read for directional guidance

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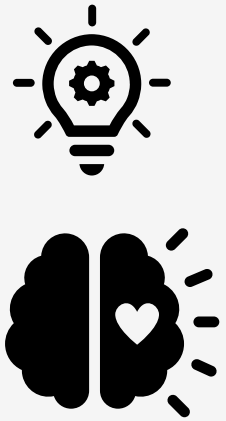
Considerations

- **Legal Limitations of Tool**
  - How can it be used without conflict?
- **Image to Text Conversion**
  - How accurate is conversion?
  - What pre-made tools can be leveraged?
- **Databases Used for Ingredient Data**
  - Must ensure that the data used in ingredient analysis is accurate and up-to-date to minimize error
- **Applications**
  - Are there other areas where this tool could be used effectively?



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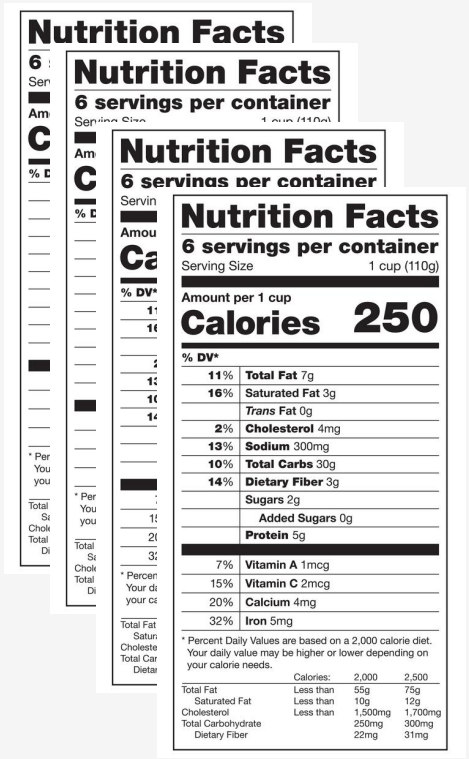
Recipes



(With ingredients listed in descending order of volume)

Database Ingredient Data

Ingredient	Calories/g	Protein/g	Fat/g …
A	30	2	12
B	20	1	6
C	10	1	5
D	40	3	7

System of Equations

$$f(x) = mx + b$$
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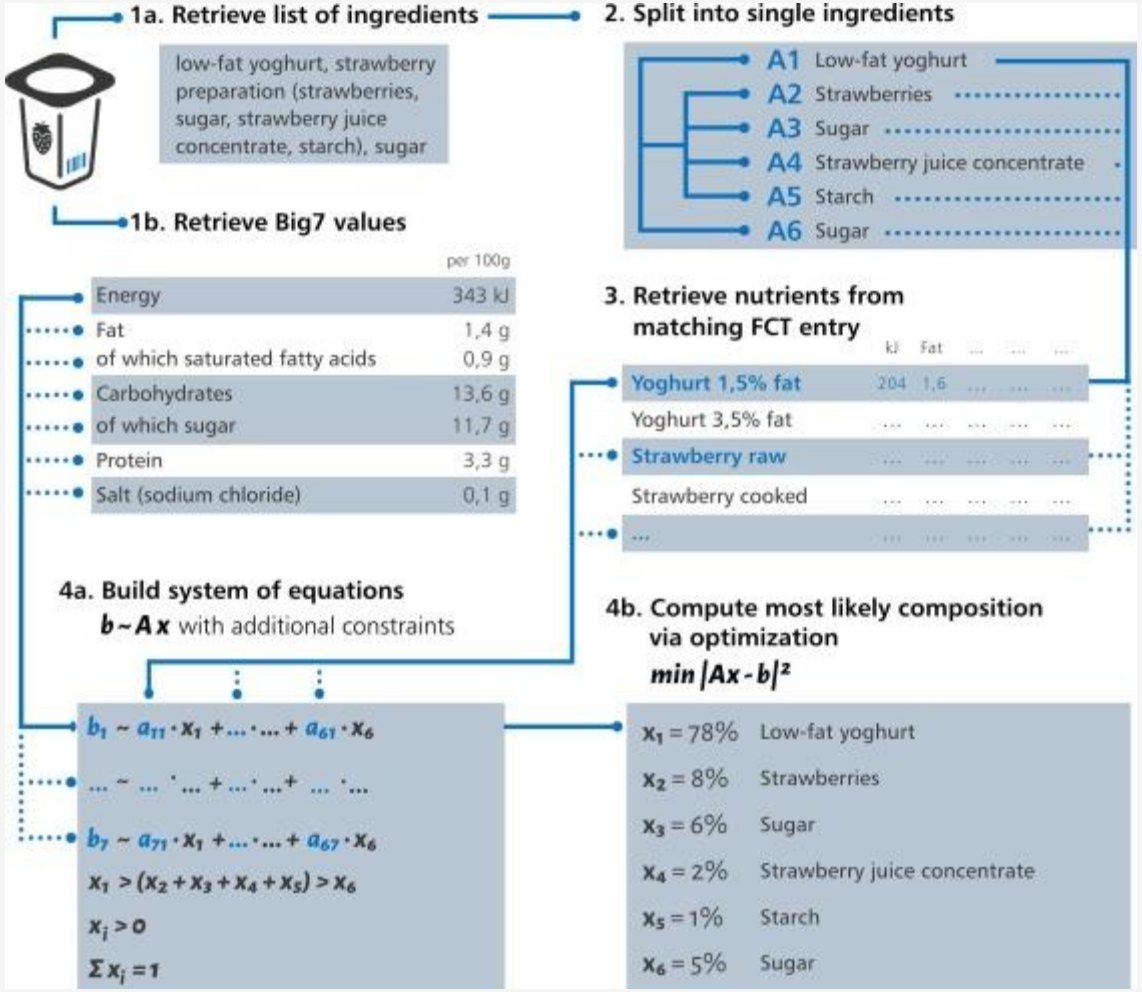
Approach From Linked Paper



Thank you

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