

## **Problem Statement: AI-enabled smart label reader for packaged food products**

What is the purpose of this Problem Statement?

1. **Automate data collection** for packaged food products to help consumers make informed decisions.
2. Extract existing data from product labels: Product Name, Product Qty, Brand Name, Weightage in Grams/ML, Nutritional Information, Serving Size, Ingredients, Product Category, and Proprietary Claims (e.g., sugar-free, trans-fat-free).
3. **Enhance the data** by categorizing food products into indexes based on user habits (nutritional, regular, recreational), and frequency (daily, weekly, monthly).
4. **Promote healthier choices** by utilizing AI to provide health analysis and nudges based on product data.

Key Features:

1. **Product Data Automation:** Automated extraction of key information from packaged food labels.
2. **Health Analysis:** AI-based health analysis of the product, focusing on harmful ingredients, processed food, and nutrient deficiencies.
3. **User-Specific Nudges:** Personalized recommendations based on dietary habits and health conditions (e.g., diabetes, allergies).
4. **Categorization:** Food categorized into indexes based on purpose and frequency of consumption.

Approach:

1. **Data Collection:** Automating the process of reading food labels to gather accurate product data.
2. **Health Analysis:** Using AI to analyze nutritional information and provide recommendations, ensuring that analysis adds value to the user's decision-making process.
3. **User Interface:** Solve for better user experience through multi-modal interfaces that enhance accessibility across different languages and formats.
4. **Data Enrichment:** Augmenting data with additional insights (e.g., harmful ingredients, nutrient deficits) relevant to the product's health impact.

Add-ons:

1. **Multi-modality:** Supporting multiple languages and formats to ensure a seamless user experience.
2. **Dynamic Database:** Continuously updated with new food products introduced in the market.
3. **Scientific Credibility:** Ensuring that the analysis is backed by credible scientific data and is relevant to the users' health.

### Tech stacks:

- **Frontend:** React.js, HTML/CSS, JavaScript, Bootstrap
- **Backend:** Python (Flask/FastAPI), Node.js
- **Database:** PostgreSQL, MongoDB, Firebase
- **AI/ML:** TensorFlow, PyTorch, Scikit-learn
- **Cloud/Hosting:** AWS (EC2, S3), Google Cloud, Heroku
- **Mobile:** React Native, Flutter
- **Localization:** Google Translate API, i18next

### Challenges:

1. **Accuracy:** Ensuring that the data collected from food labels is accurate and reliable.
2. **Relevance:** Making sure that the health insights and product categorizations are relevant to consumer health.
3. **Cognitive Overload:** Presenting the data in a user-friendly manner without overwhelming the user.
4. **Regulatory Compliance:** Adhering to food labeling regulations and standards.
5. **Data Availability:** Keeping the product database exhaustive and updated with the latest offerings from retailers.

### Basic Questions:

1. What inspired you to develop this solution for smarter food choices?
2. Can you briefly explain how your solution works?
3. What technologies and frameworks did you use in developing this solution?
4. How did you ensure the accuracy and credibility of the data used for the health analysis?
5. What kind of machine learning algorithms are you using, and why did you choose them?
6. How do you handle real-time product data extraction and health analysis?
7. What challenges did you face during development, and how did you overcome them?
8. How does your solution comply with existing food labeling regulations?
9. What is your target audience, and how do you plan to reach them?
10. What future features do you envision for your solution?