The SLED (Shelf Life Expiration Date) Tracking System: Combating Food Waste and Food Borne Illnesses from Expiration Using Machine Learning

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The issue of food waste is a major problem that contributes to the emissions of greenhouse gases into the environment in addition to causing illness in humans. This experiment aimed to develop a correlation between the amount of time until a food spoiled and dates on food labels in conjunction with sensory observations. Additionally, sensory observations are more accurate as they are immediate observations that are specific to the food. This experiment observed bananas, bread, milk, eggs, and leafy greens over a period of time using characteristics specific to the food to determine when these foods spoiled. It was shown that the actual time until spoilage for all foods were longer than that of the best by date and that sensory observations proved to be the most accurate factor in determining spoilage. From this data, a machine learning algorithm was trained to predict if food was spoiled or not in addition to the number of days until spoilage. This was presented to the consumer as an app, where the user can track foods and are reminded to check on them to prevent wastage. In addition, the experimental procedures were incorporated into a test kit for the consumer to take instructed observations to assess the spoilage of their food, which are then entered into the app to improve the algorithm. This paper discusses the individual effects of sensorial observations on each food and examines the shifting of consumer habits through an app and test kit to combat the food waste crisis.

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