Project Milestone 1 Submission

**Sustainabite Progress Report**

**Date**: July 7, 2025

**Project Summary:**

SustainaBite is an AI-Powered web app that reduces food waste by suggesting recipes based on expiring ingredients. The system takes user-inputted food inventory (item + best before date) and outputs recipe recommendations using a custom Random Forest classifier trained on synthetic data.

**Accomplishments:**

* Data Generated: Created 300 synthetic training examples with 4 key features (matched ingredients, total ingredients, average days to expiry, and match ratio).
* Preprocessing: Implemented automatic best before day calculation and ingredient normalization.
* Baseline Model: Trained Random Forest classifier (85% accuracy, 0.92 cross-validation score).
* Pipeline: Built Basic Flask web interface with real-time predictions.

**Challenges:**

* Initial perfect accuracy (1.0) revealed oversimplified synthetic data.
* Class imbalance (more “Poor Match” examples than “Good Match”).
* Solutions added: Introduces label noise and cross-validation.

**Project Changes:**

* Shifted from rule-based scoring to classifier for better adaptability.
* Simplified UI to focus on core AI functionality first.
* Postponed expiry date prediction model based on best before date to focus on recipe suggestion model.