Project Milestone 1 Submission

<u>Sustainabite Progress Report</u>

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.