Apple Quality

Classification

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Revolutionizing the Apple Industry

- Our mission: Revolutionize quality assurance to save good apples:

  reducing waste, and saving money!

Apple Quality Dataset

- Desired performance metric:
  at least **90% accuracy**

Stakeholders

Apple Growers

Optimize harvest,
Reduce waste.

Distributors

Efficient logistics,
Premium markets.

Retailers

Inventory management,
Customer satisfaction.

Features

Size

Weight

Sweetness

Crunchiness

Juiciness

Ripeness

Acidity

Quality

Models

Baseline

51%
accuracy, precision, recall

1

Decision Tree

81%
accuracy, precision, recall

2

Random Forest

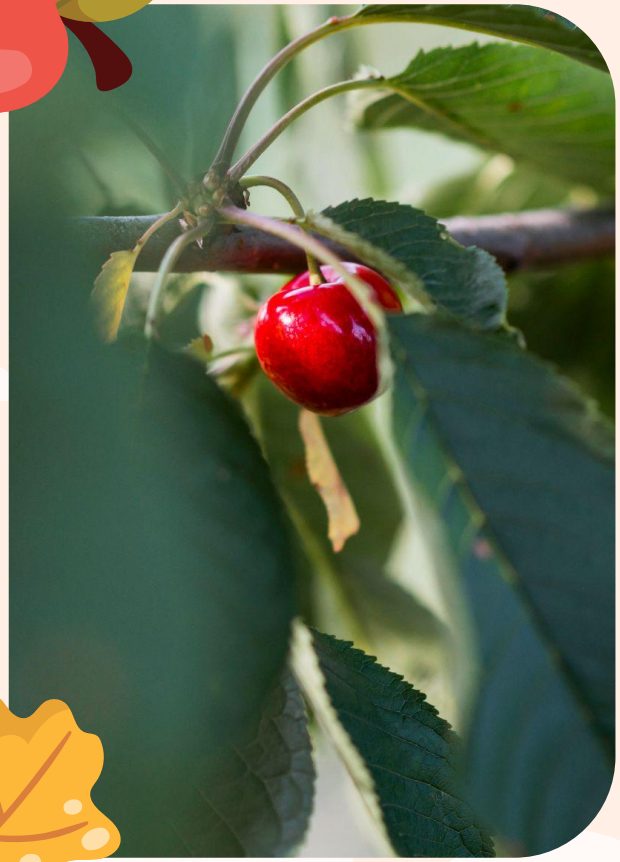
83%
accuracy, precision, recall

3

Gradient Boost

90%
accuracy, precision, recall

4



LightGBM

Final Model: Gradient Boosting

Performance is strong and balanced.

- Precision
- Recall
- F1-scores

90%

for all target values: (good / bad)

Recommendations

Integrate into QA

- Including the LightGBM model will catch most bad apples

Human Inspection

- Model will miss subtle cases, so human inspection is still vital!

Retrain Periodically

- Adapt to changing factors
  - Seasonal changes
  - New apple varieties

Implement Monitoring

- Track performance to ensure consistency

Thanks!

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Questions? Feel free to reach out!

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