RPG Encoding: Extracting RPG from Codebases

Code Project
- sklearn
  - tree
    - _class.py
    - _export.py
  - metrics
    - _regression.py
  - feature_selection
    - _rfe.py
  - isotonic.py
  - base.py

Semantic Lifting

Leaf Node Information
feature: Monotonic trend detector
meta:
  type: function
  fpath: sklearn/isotonic.py
  func_name: check_increasing

Functional Abstraction

Functional Centroids
Preprocessing   Algorithms   Metrics

Hierarchical Aggregation

Artifact Grounding

Upper Node Information
feature: Algorithms
meta:
  type: directory
  fpath: sklearn/tree,
  sklearn

LLM   Feature Node   Folder-level Node   File-level Node   Function-level Node
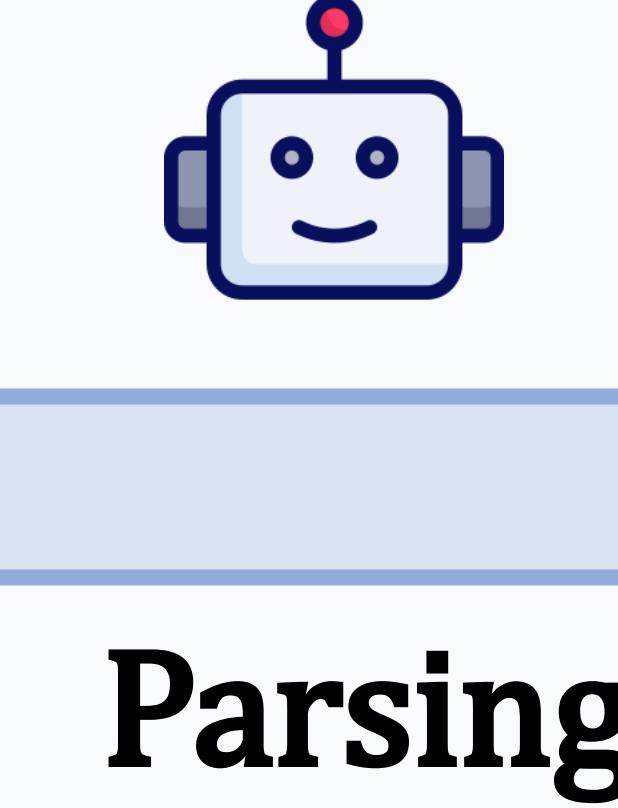Functional Edge   Dependency Edge

Repo

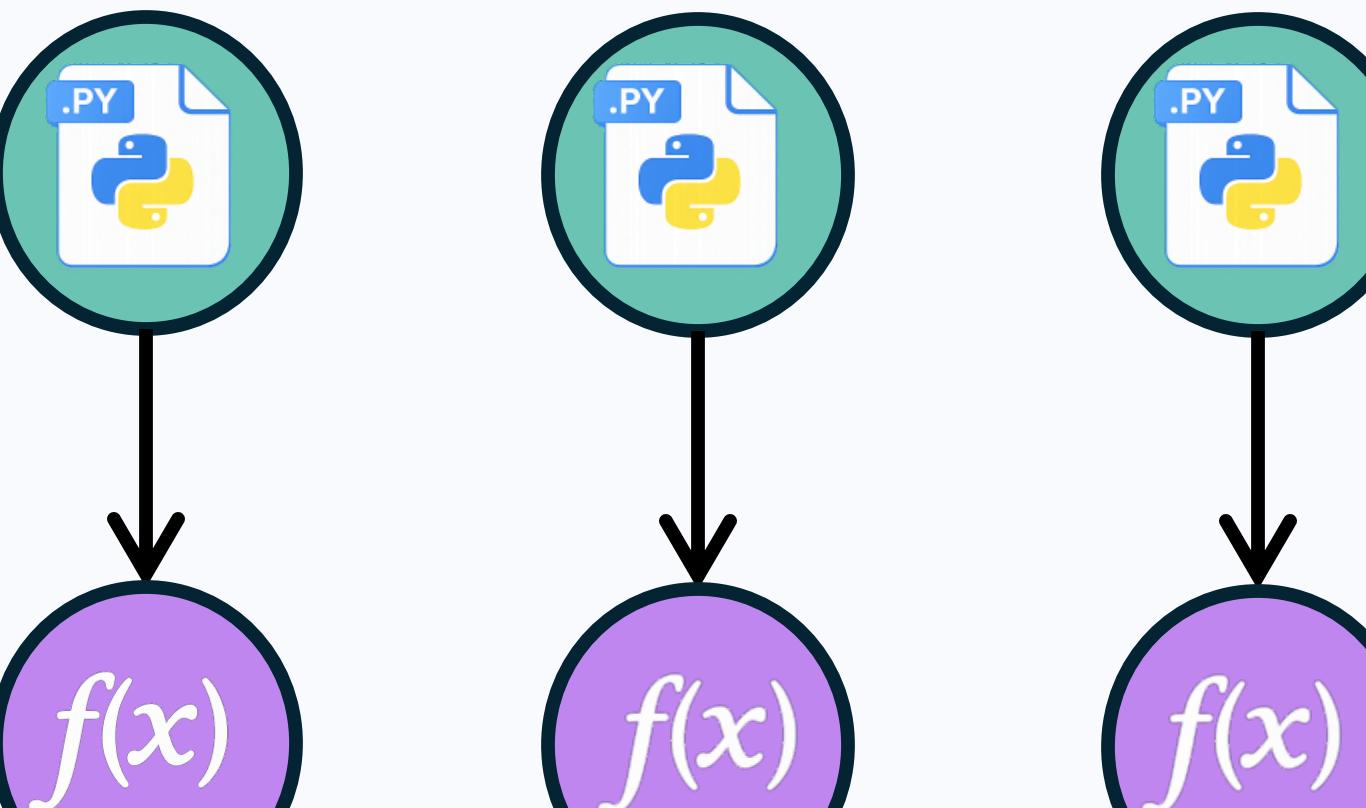**RPG Evolution: Incremental Maintenance**

Commit
```
--- a/sklearn/isotonic.py
+++ b/sklearn/isotonic.py
@@ -350,13 +350,23 @@
def check_increasing(x, y):
-    rho, _ = spearmanr(x, y)
+    x = np.asarray(x)
```
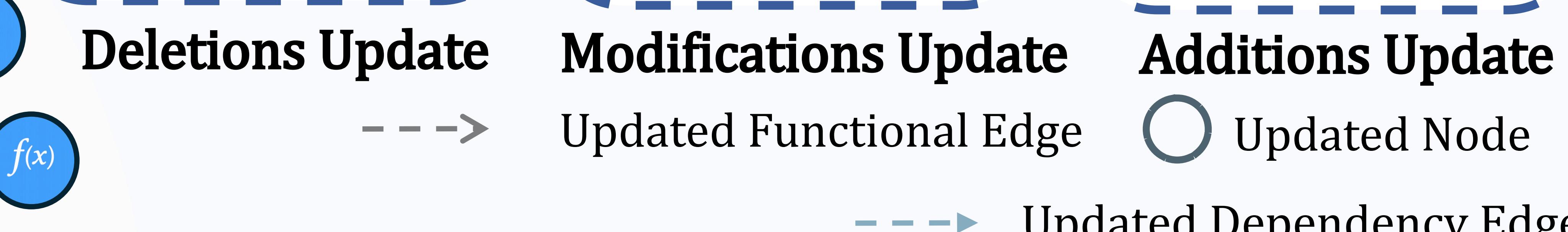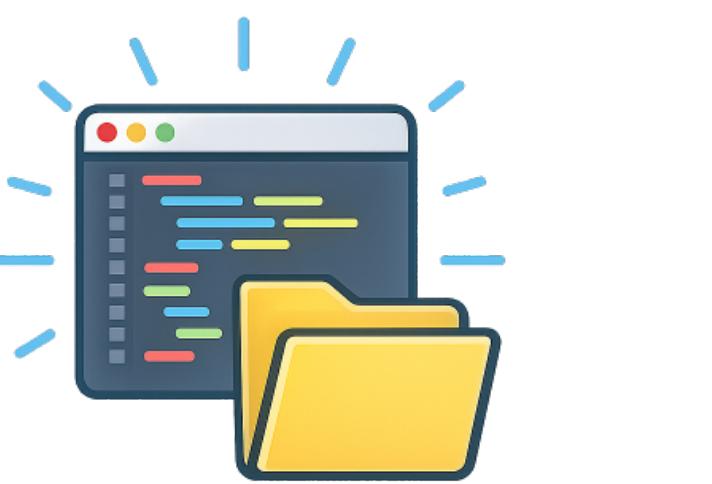
Parsing

Feature Extraction

Update RPG

Deletions Update   Modifications Update   Additions Update

- - → Updated Functional Edge   ◯ Updated Node
- - → Updated Dependency Edge

RPG Operation: Unified Reasoning Substrate

⚠ **Issue Description**
_ovr_decision_function in **SVM** was not correctly normalizing the sum of the votes.

Rebuilt Repo

1. Repository Understanding   Interaction with RPG

2. Repository Reconstruction

Implement SVM in classes.py

Traverse RPG

Output
File: sklearn/svm/_base.py
Func: decision_function
Line: 768-798

Tools
- SearchNode
- FetchNode
- ExploreRPG