

MA477: Data Science
Lesson 23 Board Sheet — 12 March 2026
United States Military Academy, West Point
Instructor: MAJ Patrick Kuiper

1 Boosting Decision Trees Lesson Objectives

- Understand the algorithm for boosting regression trees and how it differs from the basic decision tree and bagging.
- Use functions in Python's sklearn module to fit boosted regression trees.

Discussion Questions

1. Why does predicting residuals help improve the model?
2. How does boosting differ from bagging or random forests?
3. Describe the hyperparameters of boost9ing and how you will solve for them?
4. Describe how boosting is similar to gradient descent?