- Suppose the model **correctly predicts B1 and B2** but **fails on B3**.
- **If a source sample (A1, A2) contributed to errors on target samples, its weight is reduced.**
- **Misclassified target samples get higher weights.**

tradaboost

| Sample ID | True Label | Predicted Label | Error? | Updated Weight |
|---|---|---|---|---|
| A1 | 5.2 | 5.4 | ❌ No | 🔻 Decreases |
| A2 | 8.7 | 6.9 | ✅ Yes | 🔺 Increases |
| B1 | 6.5 | 6.4 | ❌ No | 🔻 Decreases |
| B2 | 7.3 | 7.2 | ❌ No | 🔻 Decreases |
| B3 | 8.1 | 6.5 | ✅ Yes | 🔺 Increases |

### 🔷 Step 3: Retrain Model with Updated Weights

- The next iteration **downweights bad source samples (A1) and focuses on misclassified target data (B3)**.
- If source data isn't helping, it gets even lower weight in future rounds.

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balance weighting

| Sample ID | True Label | Initial Weight | Adjusted Weight (Based on Domain) |
|---|---|---|---|
| A1 | 5.2 | 1.0 | 🔻 0.01 (to balance with target) |
| A2 | 8.7 | 1.0 | 🔻 0.01 |
| B1 | 6.5 | 1.0 | 🔺 0.05 |
| B2 | 7.3 | 1.0 | 🔺 0.05 |
| B3 | 8.1 | 1.0 | 🔺 0.05 |

🔷 **Step 2: Train the Model**

## 🚀 Summary: How Each Method Handles the Samples

| Sample ID | TrAdaBoost (Adaptive) | Balance Weighting (Fixed) |
|---|---|---|
| A1 (**Bad Source**) | 🔻 Weight decreases (ignored) | 🔻 Fixed low weight |
| A2 (**Helpful Source**) | 🔺 Weight increases | 🔻 Fixed low weight |
| B1 (**Correctly Predicted Target**) | 🔻 Weight decreases | 🔺 Fixed high weight |
| B2 (**Correctly Predicted Target**) | 🔻 Weight decreases | 🔺 Fixed high weight |
| B3 (**Misclassified Target**) | 🔺 Weight increases (focus) | 🔺 Fixed high weight |