MSE, RMSE, MAE

MSE

Mean Squared Error

$$\Sigma(y_i - \hat{y}_i)^2 / n$$

- 🎯 Squares differences
- ⚡ Heavily penalizes large errors
- 📊 Squared units

RMSE

Root Mean Squared Error

$$\sqrt{(\Sigma(y_i - \hat{y}_i)^2 / n)}$$

- 🎯 Square root of MSE
- ⚡ Same units as target
- 📊 More interpretable

MAE

Mean Absolute Error

$$\Sigma|y_i - \hat{y}_i| / n$$

- 🎯 Absolute differences
- ⚡ Treats all errors equally
- 📊 Robust to outliers

Quick Comparison

Property	MSE	RMSE	MAE
Outlier Sensitivity	High ⚠	High ⚠	Low ✓
Interpretability	Low	High ✓	High ✓
Units	Squared	Original ✓	Original ✓

🎯 Key Insight: Lower values = Better performance • Choose based on outlier importance