
Tera

Aula #23

Gradient Boosting

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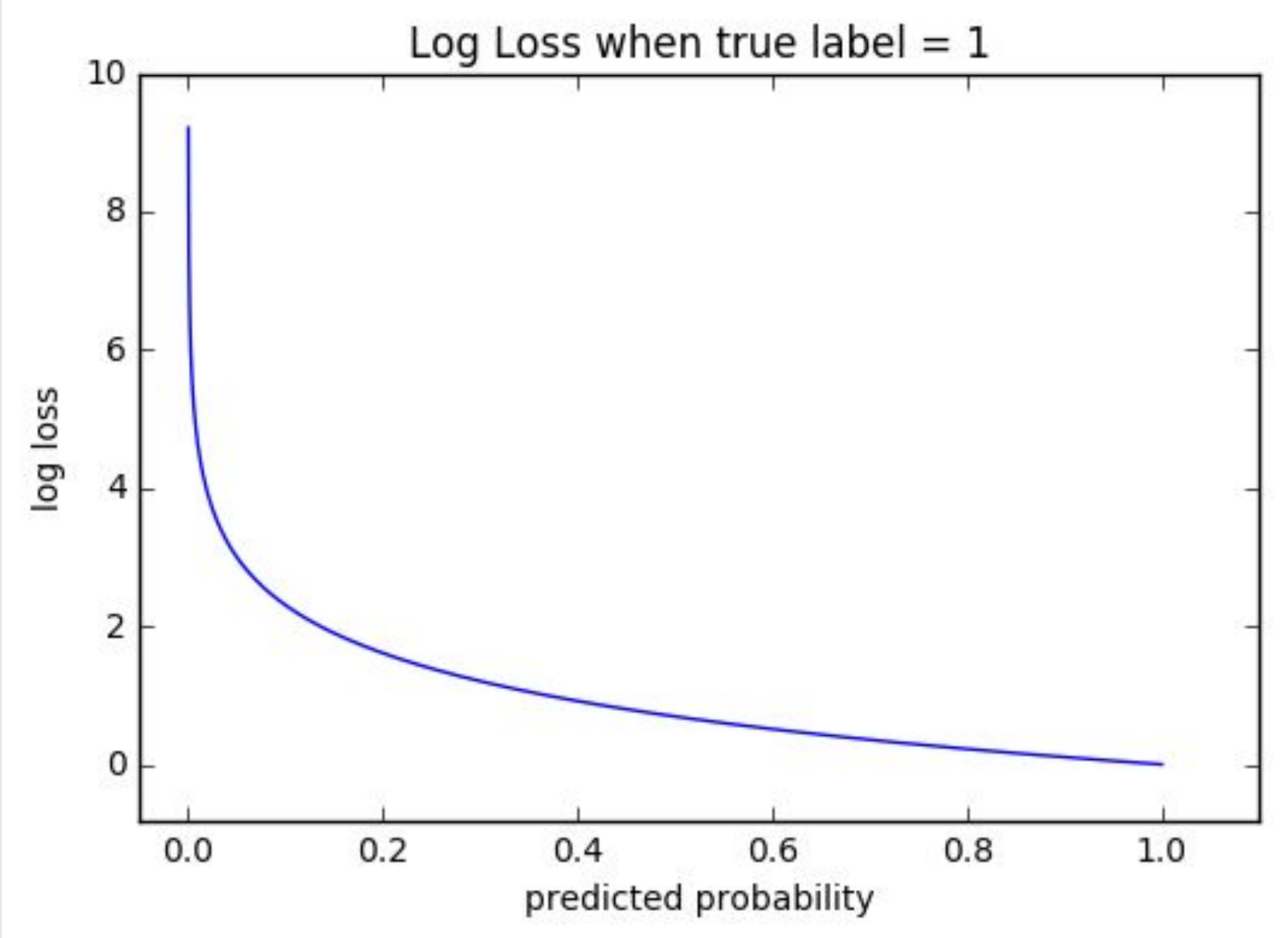
```
import lightgbm as lgb
```

Métrica Log Loss

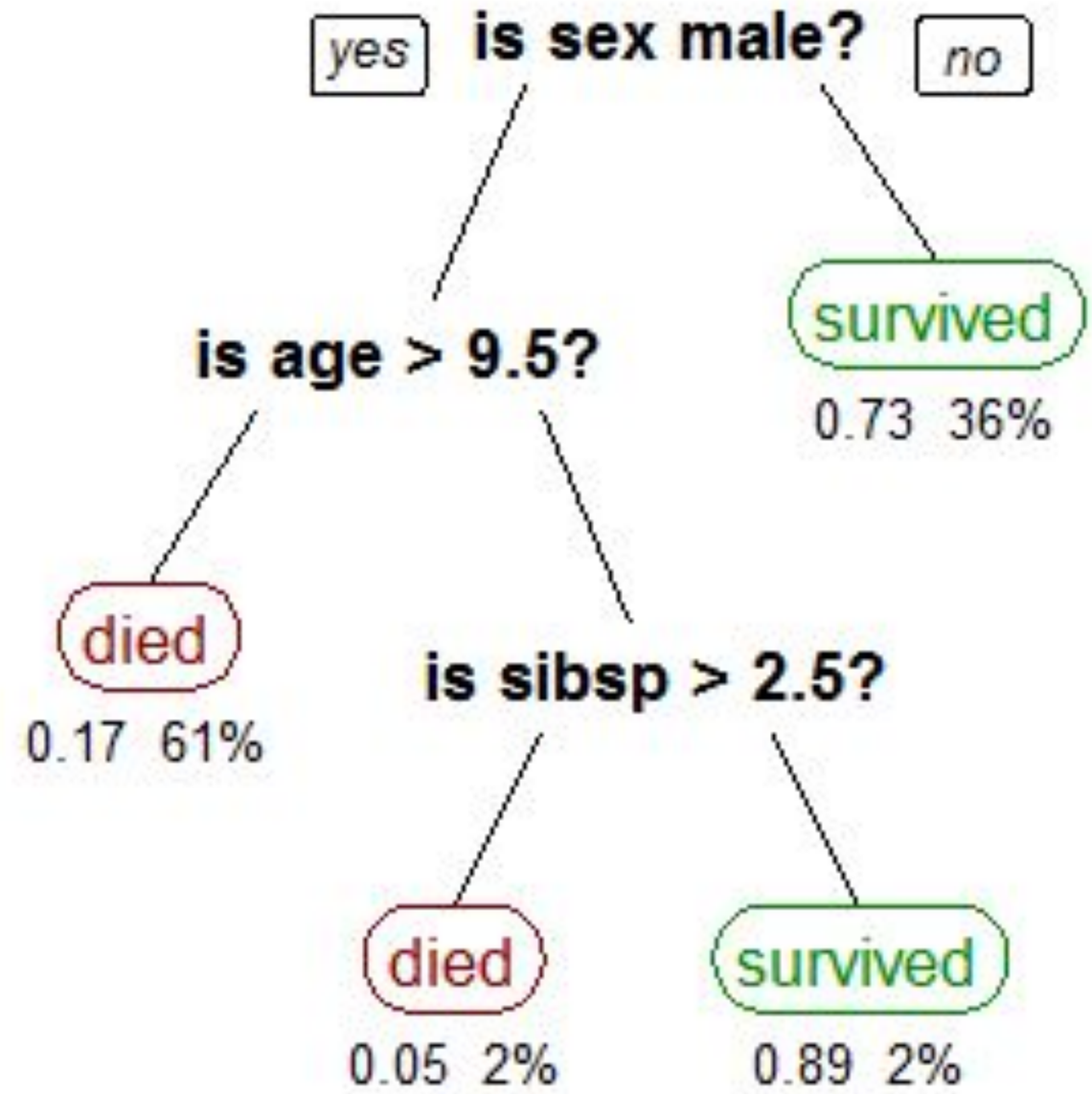
- Penaliza predições baixas quando o exemplo é positivo (e vice-versa)

- Muito utilizada em competições



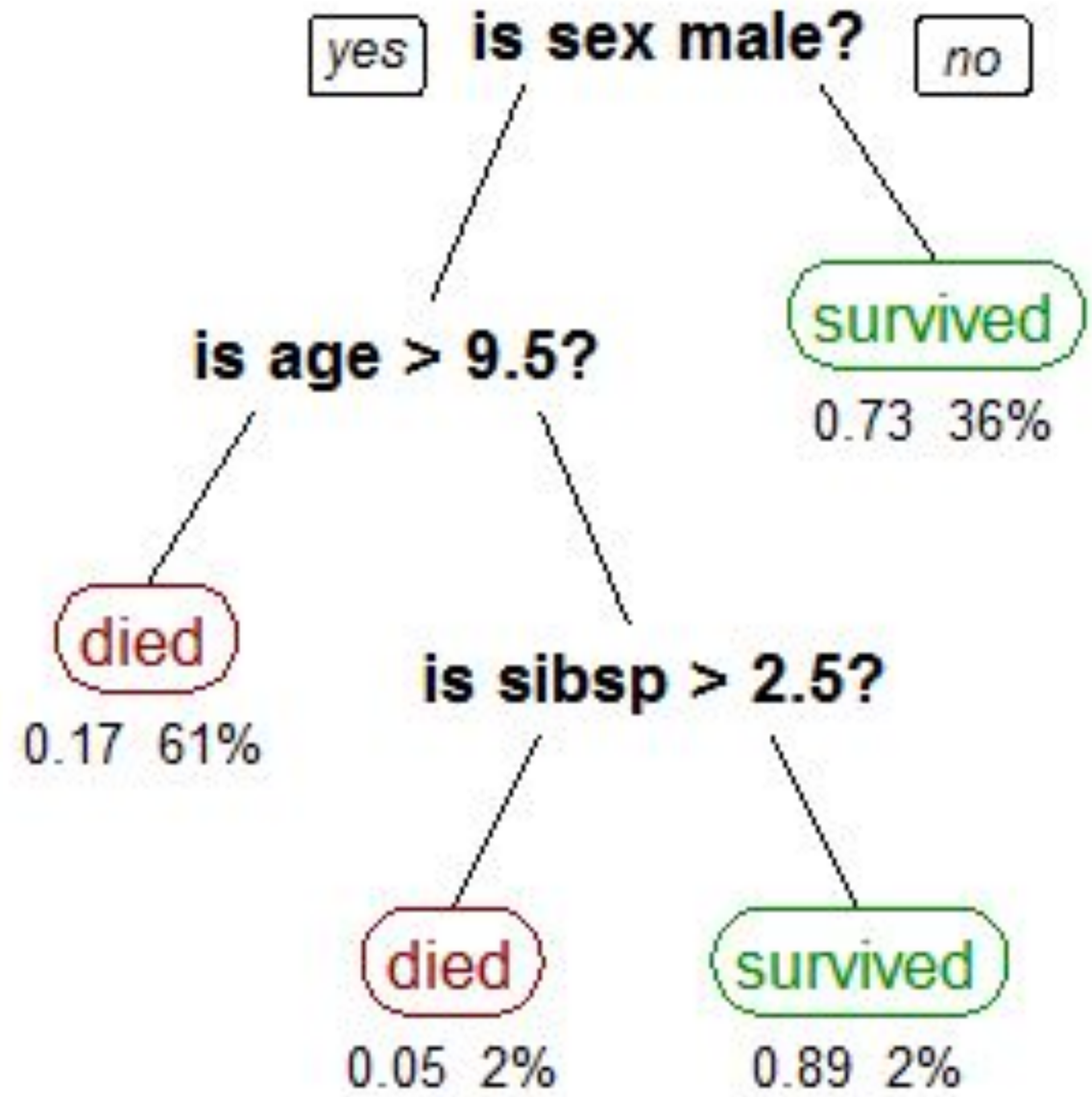
Métodos baseados em árvores

- Robustos contra outliers
- Não precisam de normalização

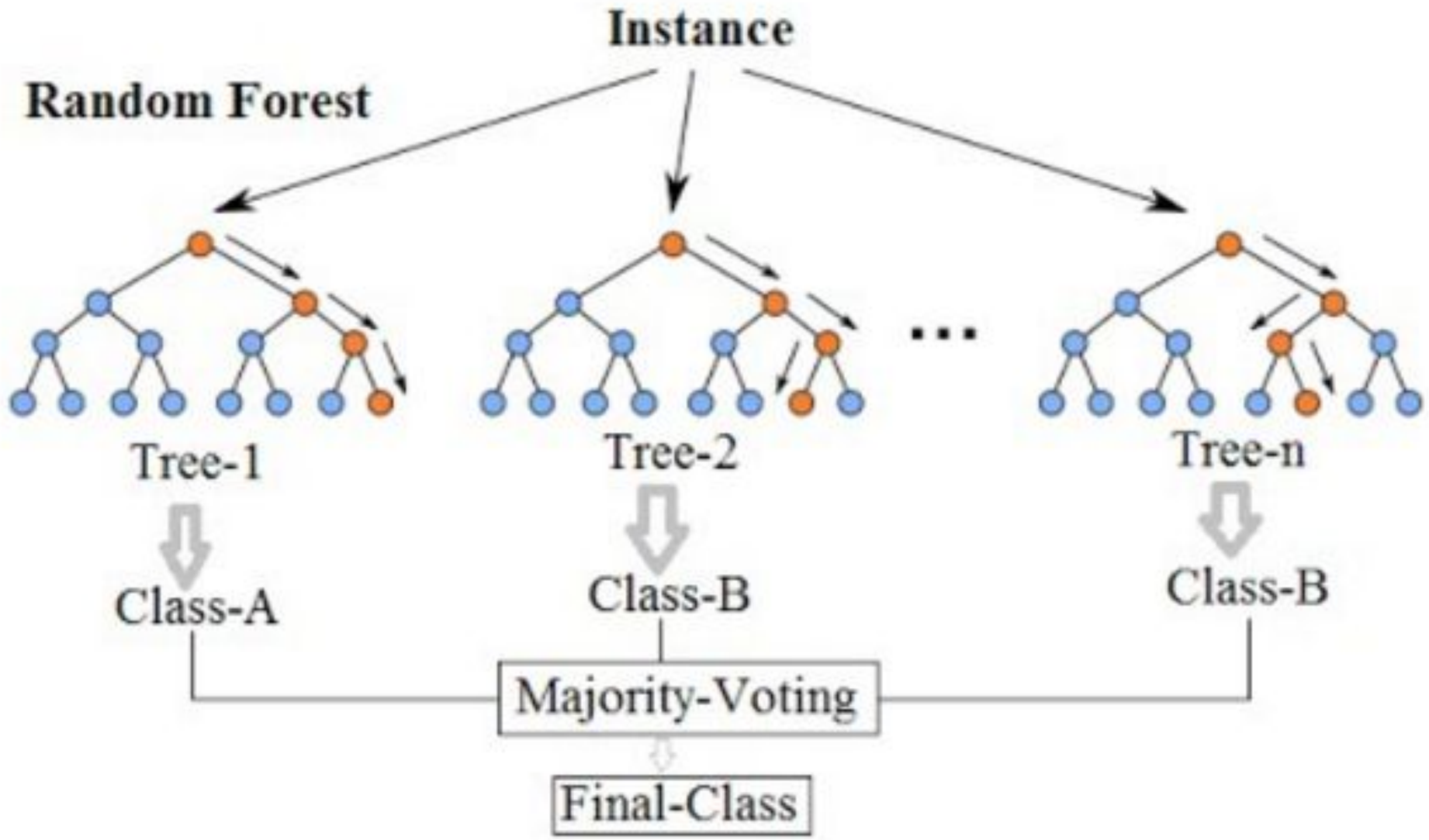


LightGBM

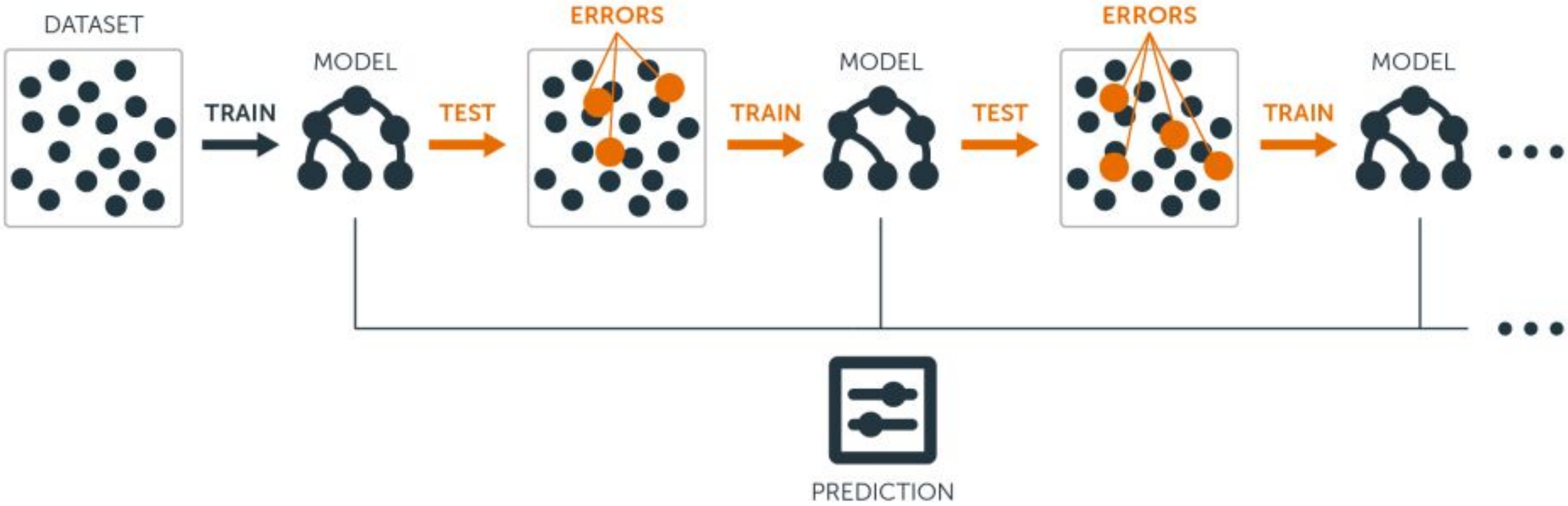
- Aceita valores nulos
- Aceita variáveis categóricas



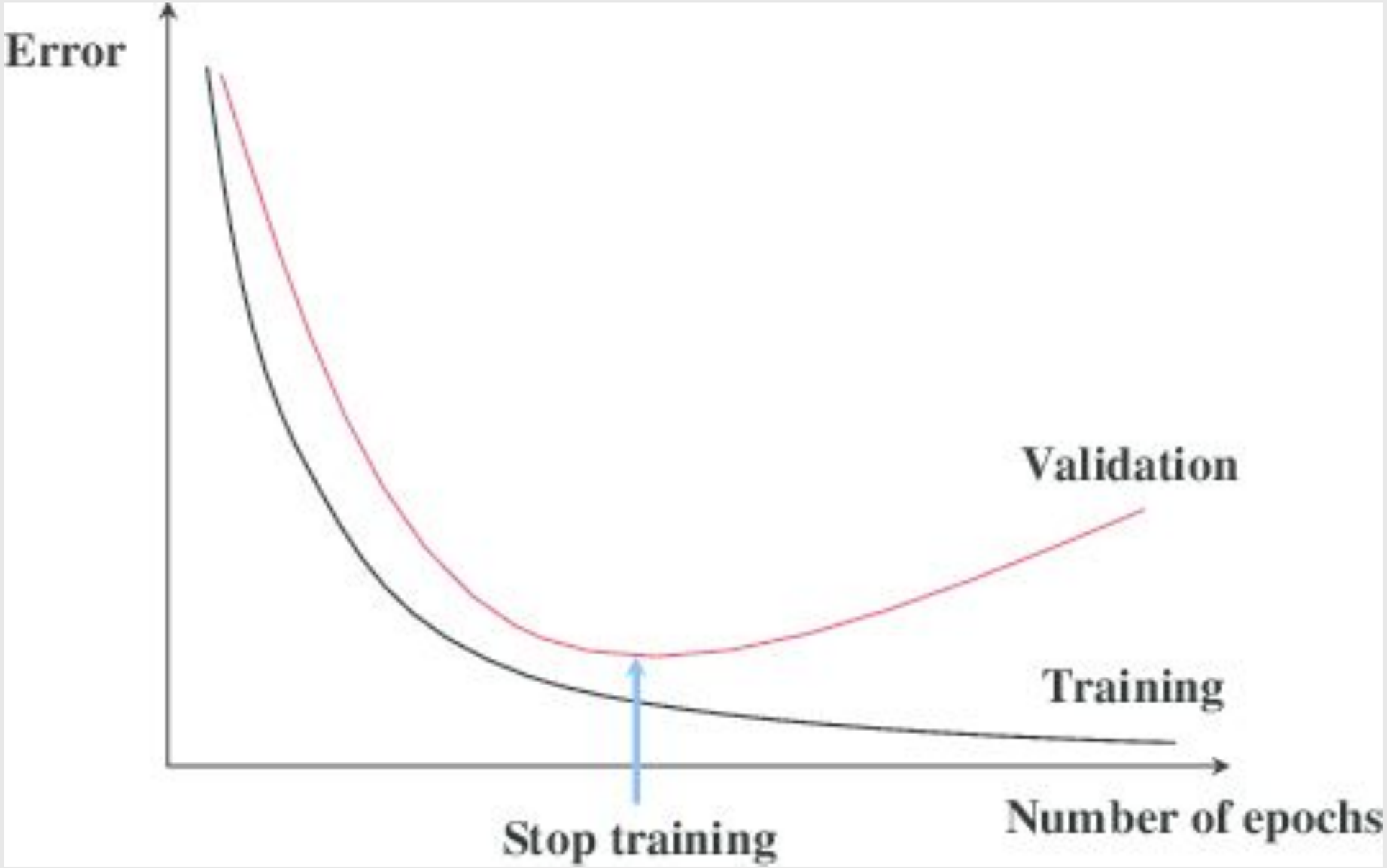
Random Forest Simplified



Gradient Boosted Trees



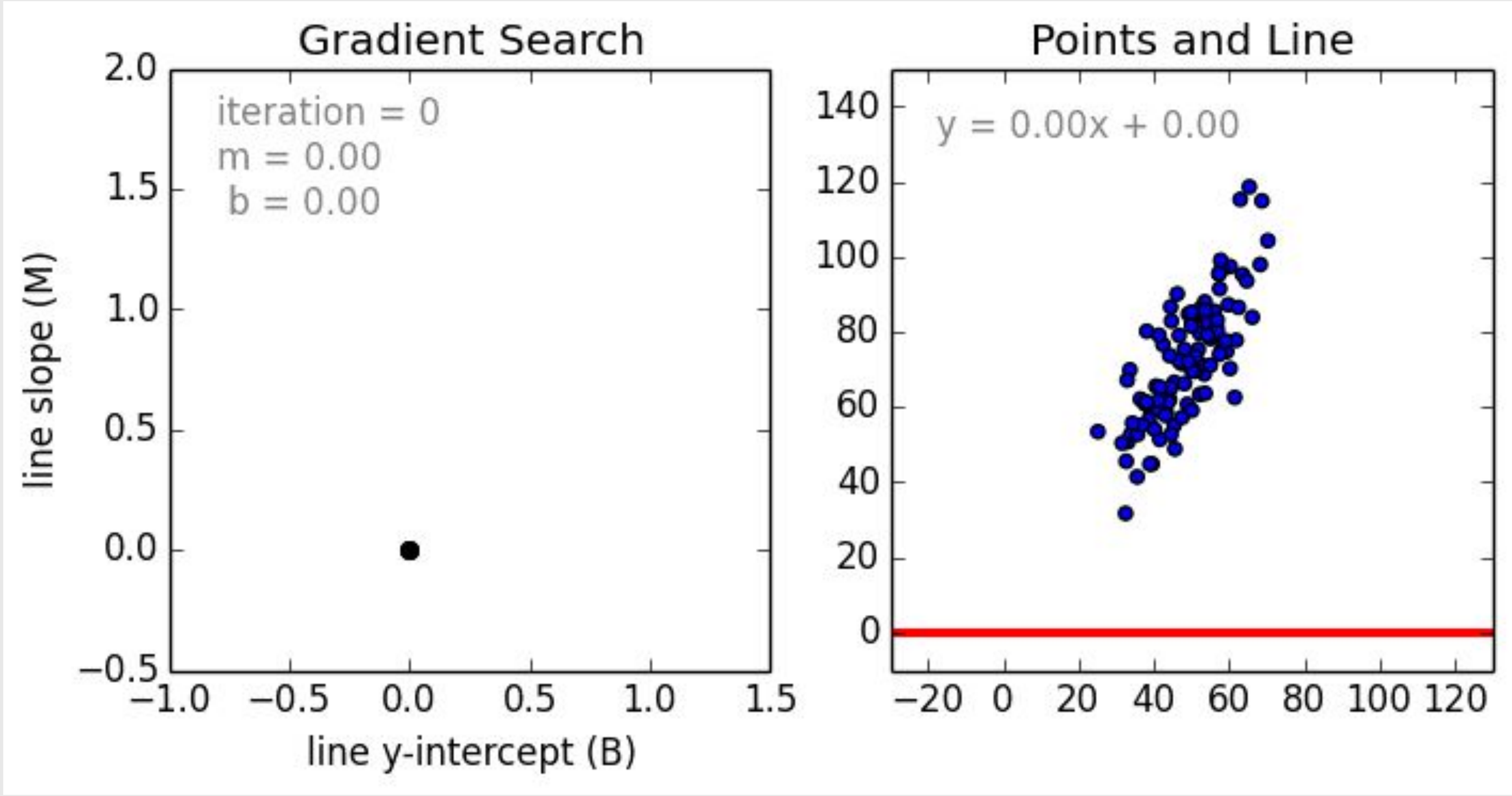
Early Stopping



```
param_grid = {
    'learning_rate': [0.01, 0.03, 0.1],
    'max_depth': [16, 20],
    'n_estimators': [319, 1070, 3855]
}
```

```
param_grids = [
    {'learning_rate': [0.01], 'max_depth': [16], 'n_estimators': [3855]},
    {'learning_rate': [0.03], 'max_depth': [20], 'n_estimators': [1070]},
    {'learning_rate': [0.1], 'max_depth': [20], 'n_estimators': [319]}
]
```

Gradient Descent & Learning Rate



Learning Rate: valores comuns

- 0.003
- 0.01
- 0.03
- 0.1
- 0.3
- 1

Outros hyper-parâmetros:

- reg_l1
- reg_l2
- subsample
- colsample_bytree

DÚVIDAS?