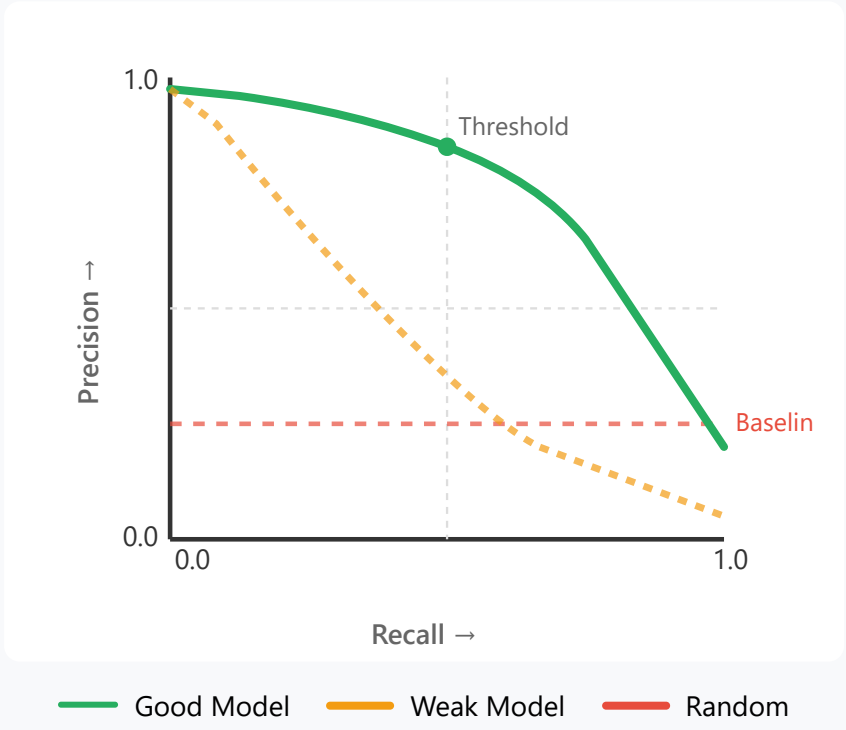
Precision-Recall Curve

PR Curve Visualization



📊 PR Curve

Plots Precision vs Recall at different thresholds. High area indicates both metrics are maintained well.

⚖️ vs ROC Curve

More informative for imbalanced datasets. Better reveals performance on minority class.

Key Insights

Steep Decline
Difficult P-R tradeoff

High Area
Strong classifier

Baseline
= Positive class %

Complement
Use with ROC

💡 Best Used For

Fraud Detection

Rare Disease Detection

Imbalanced Datasets

How to Construct a PR Curve: Step-by-Step

1 Model Predictions & Thresholds

Sample	Score	True Label	@ 0.9	@ 0.7	@ 0.5	@ 0.3
A	0.95	✓ Positive	✓	✓	✓	✓
B	0.85	✓ Positive	✗	✓	✓	✓
C	0.65	✗ Negative	✗	✗	✓	✓
D	0.60	✓ Positive	✗	✗	✓	✓
E	0.40	✓ Positive	✗	✗	✗	✓
F	0.25	✗ Negative	✗	✗	✗	✗

At each threshold, predict Positive if score ≥ threshold

2 Calculate Precision & Recall at Each Threshold

Threshold = 0.9

TP:	1	(A)
FP:	0	(none)
FN:	3	(B,D,E)

Precision: 1.00
Recall: 0.25

Threshold = 0.7

TP:	2	(A,B)
FP:	0	(none)
FN:	2	(D,E)

Precision: 1.00
Recall: 0.50

Threshold = 0.5

TP:	3	(A,B,D)
FP:	1	(C)
FN:	1	(E)

Precision: 0.75
Recall: 0.75

Threshold = 0.3

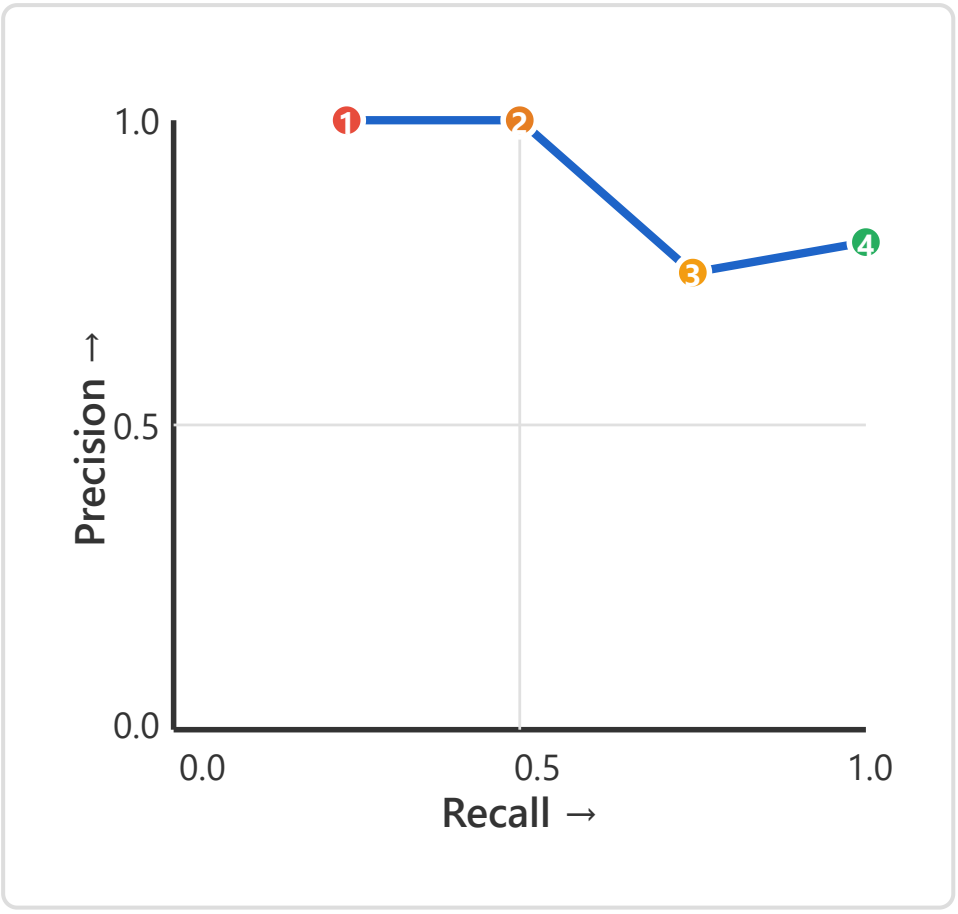
TP:	4	(A,B,D,E)
FP:	1	(C)
FN:	0	(none)

Precision: 0.80
Recall: 1.00

Precision = `TP / (TP + FP)` Recall = `TP / (TP + FN)`

3 Plot Points & Draw the Curve

1. `(0.25, 1.00)` Threshold 0.9
2. `(0.50, 1.00)` Threshold 0.7
3. `(0.75, 0.75)` Threshold 0.5
4. `(1.00, 0.80)` Threshold 0.3



Plot (Recall, Precision) coordinates for each threshold and connect them to form the PR curve

Key Insight

As we lower the threshold → More samples are predicted as Positive → Recall increases (capturing all positive samples) → But False Positives also increase → Precision decreases. The PR curve visualizes this trade-off.