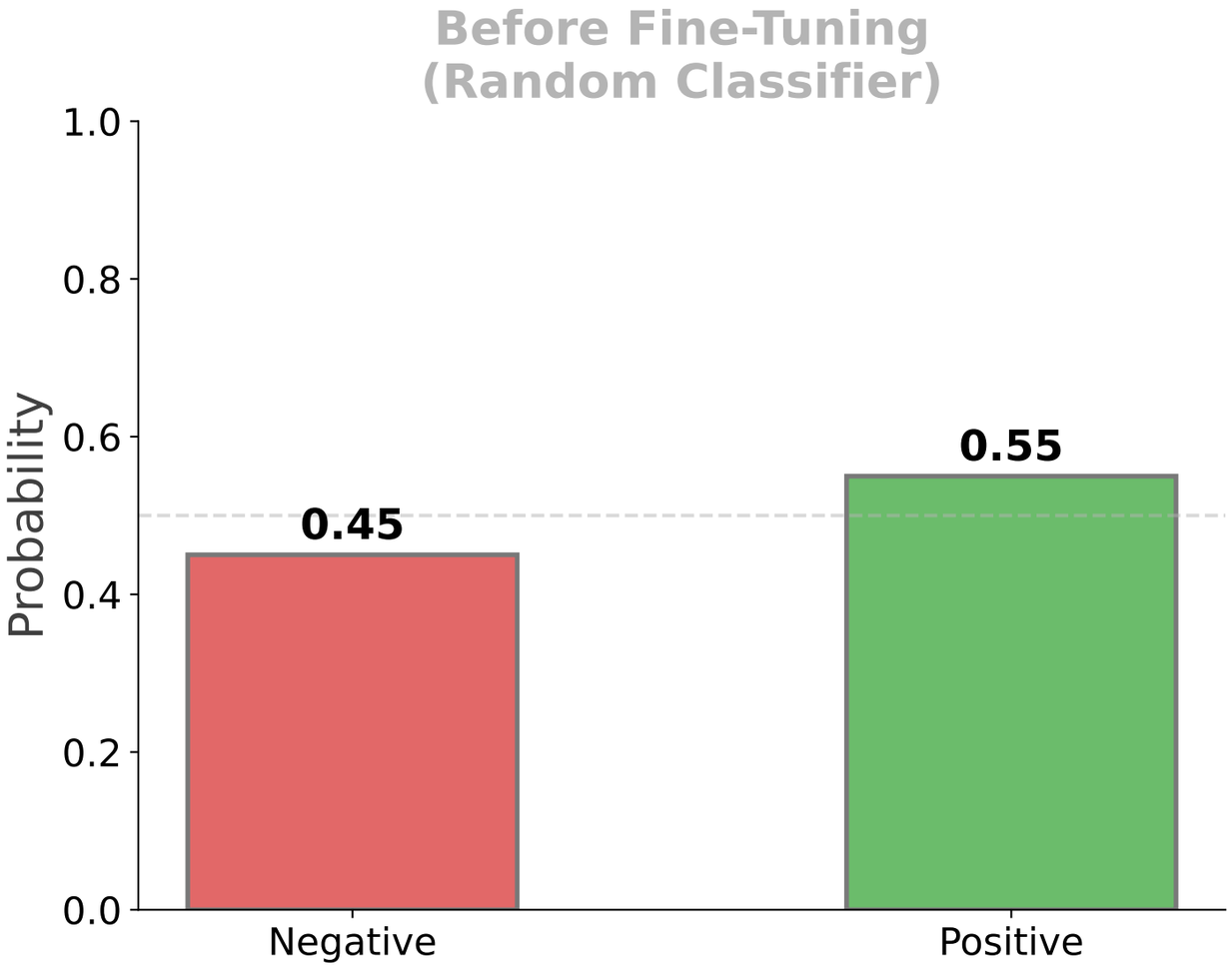
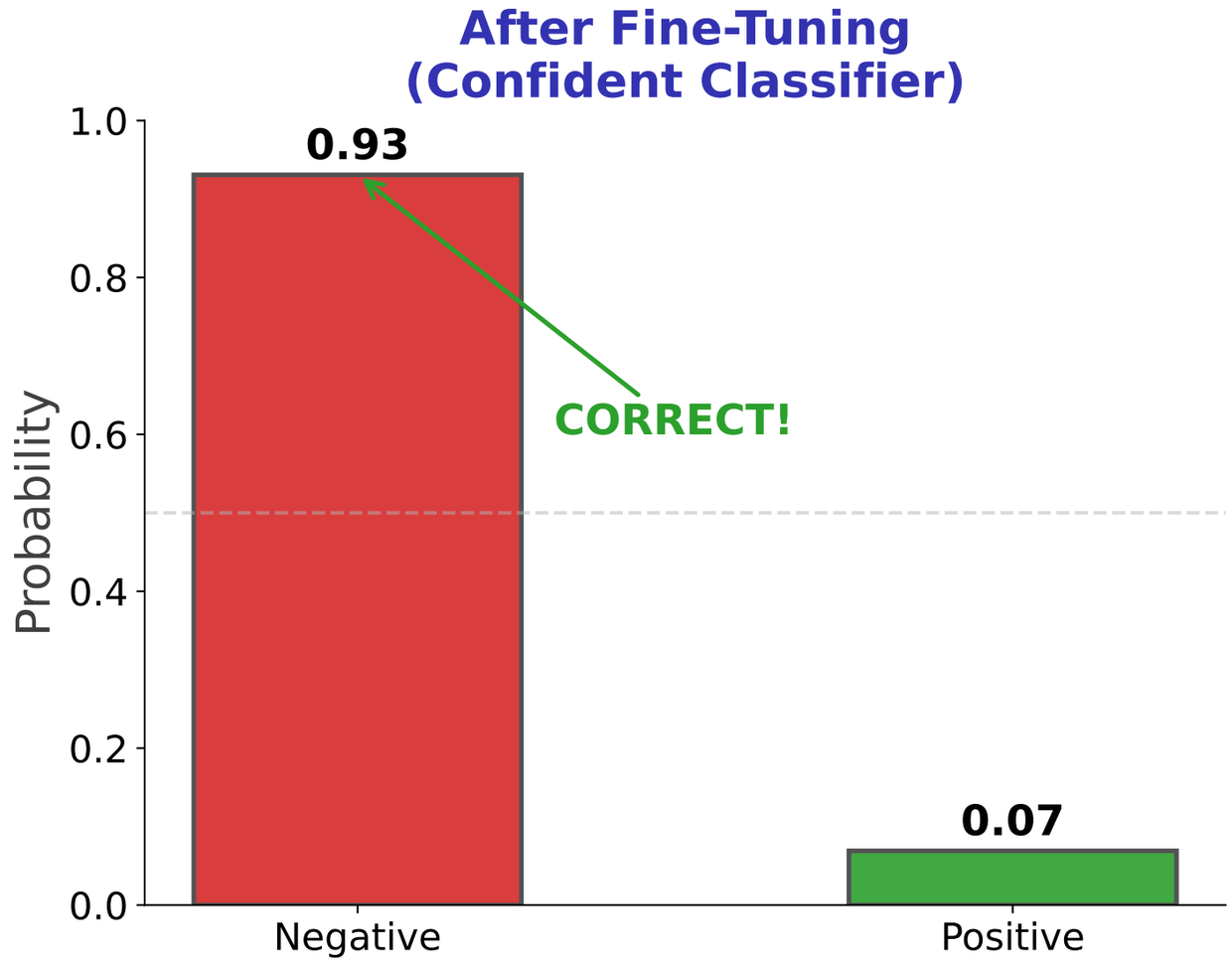
From Logits to Predictions: Softmax & Cross-Entropy





Softmax Calculation (Worked Example)

Input: "Great, another boring movie"

```
Logits: [2.1, -0.5]

exp(2.1) = 8.17
exp(-0.5) = 0.61
Sum = 8.78

P(Negative) = 8.17 / 8.78 = 0.93
P(Positive) = 0.61 / 8.78 = 0.07

Prediction: NEGATIVE (93% confidence)
```

Cross-Entropy Loss (Worked Example)

```
Ground Truth: y = [1, 0]  (Negative)
Predicted:    p = [0.93, 0.07]

Loss = -sum(y * log(p))
     = -(1 * log(0.93) + 0 * log(0.07))
     = -(-0.073 + 0)
     = 0.073

This is LOW loss (good prediction!)

If prediction was wrong:
p = [0.07, 0.93]  (predicted Positive)
Loss = -log(0.07) = 2.66  (HIGH loss!)
```