

# Loss Function

## Role & Importance

### 1. Quantification

Quantifies difference between predicted and actual values

### 2. Gradient Direction

Guides optimization process by providing gradient direction

### 6. Convergence & Accuracy

Affects convergence speed and final model accuracy

### 5. Objective Function

Acts as the objective function that the model seeks to minimize

### 3. Task-Specific Design

Different loss functions needed per task (regression vs classification)

### 4. Performance Impact

Direct impact on model performance and behavior