

Fixed vs Adaptive Learning Rate

Comparing Learning Rate Strategies

Fixed Learning Rate

Constant throughout training

- ✓ Simple implementation
- ✗ Suboptimal
- ✗ Requires careful manual tuning
- ✗ Difficult to find good value

Adaptive Learning Rate

Scheduled or metric-based variation

- ✓ Improved convergence
- ✓ Better final accuracy
- ✓ Fast early training
- ✓ Careful late refinement

Adaptive Learning Rate Types

Schedule-based

Predefined decay strategy
(Step, Exponential)

Performance-based

Reduce on validation metric plateau
(Plateau Detection)

✦ Key Benefits of Adaptive LR

- Combines benefits of fast early training and careful late refinement
- Improves both convergence speed and final model performance



Modern Practice: Always use some form of LR Scheduling