

## Few-Shot Fine-Tuning

**Learn from 5-100 Examples**  
Critical for rare diseases and limited data scenarios

**5-10**

Few-Shot

**10-100**

Low-Resource

**70-85%**

Accuracy



### Rare Disease Applications

- Orphan diseases with < 100 documented cases
- Novel disease presentations (e.g., COVID-19 variants)
- Specialized diagnostic criteria
- Unique patient populations



### Few-Shot Strategies

- **Meta-Learning:** Learn to learn from few examples
- **Prompt-Based:** Design task-specific prompts
- **Data Augmentation:** Synthetic example generation
- **Transfer Learning:** From similar rare diseases



### Implementation Tips

- Use higher learning rates ( $5e-3$  to  $1e-2$ )
- Train for more epochs (20-50 vs 3-5)
- Apply strong regularization
- Validate with leave-one-out cross-validation