

Limitations of Logistic Regression

1 Linear Decision Boundary

Can only separate data with linear boundaries. Fails on non-linear patterns like XOR problem.

2 Limited Feature Interactions

Cannot automatically learn complex feature interactions without manual feature engineering.

3 Single-layer Architecture

Lacks hierarchical representation learning. Cannot build abstract features from raw inputs.

4 Low Model Capacity

Limited expressiveness for complex patterns. Struggles with high-dimensional non-linear data.



Solution: Multi-layer Neural Networks

Neural networks overcome these limitations through multiple layers and non-linear activations