

Hierarchical Integration

Hierarchical integration from low-level features to high-level semantics through multi-stage fusion



Level 1 **Low-level Feature Fusion**
Raw data or initial features: Texture, edges, pixel intensity, frequency components



Level 2 **Mid-level Feature Fusion**
Partial semantic representation: Anatomical structures, object parts, pattern combinations



High-level Semantic Fusion

Level 3

Abstract concepts: Disease categories, diagnostic labels, clinical interpretation



Level 4

Decision-level Fusion

Final prediction: Diagnosis, treatment plan, prognosis, risk score

Multi-scale
Information Utilization

Progressive
Abstraction

Enhanced
Interpretability