

Model Selection Criteria

Choosing the Right Model

Performance, efficiency, safety, and regulatory compliance



Selection Dimensions

- **Performance:** Accuracy on medical benchmarks
- **Efficiency:** Inference latency and throughput
- **Safety:** Error rate on critical tasks
- **Interpretability:** Explanation capabilities
- **Cost:** Training and deployment expenses



Medical Safety Requirements

- Sensitivity to harmful outputs: $< 0.1\%$
- Critical error rate: $< 1\%$
- Consistency across similar inputs: $> 95\%$
- Appropriate uncertainty quantification



Regulatory Considerations

- **FDA:** Software as Medical Device (SaMD)
- **HIPAA:** Patient data privacy compliance
- **EU MDR:** Medical device regulation

- **Documentation:** Model cards, risk analysis



Deployment Constraints

- **Latency:** < 2s for interactive applications
- **Hardware:** Available GPU/CPU resources
- **Scalability:** Handle concurrent users