## Multi-Scale Trade-off Analysis

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| **Metric** | **Cloud Server** | **Edge Device** | **Microcontroller** |
| Model Size | X.X MB | X.X MB | X.X KB |
| Accuracy | XX.X% | XX.X% | XX.X% |
| Latency | X.X ms | X.X ms | X.X ms |
| Memory Usage | X.X MB | X.X MB | X.X KB |
| Power Estimate | X.X W | X.X mW | X.X mW |
| Development Complexity | Low | Medium | High |

## Optimization Strategy Effectiveness

* Mixed Precision
  + Training Time: 116.2 seconds
  + Accuracy: 82.5%
* Distributed training scaling efficiency
* Batch Processing optimization benefits
* Knowledge distillation effectiveness

## Deployment Strategy Recommendation

* Scenario A: Real-time Video Processing

Requirements: <50ms latency, high accuracy, continuous operation

* Scenario B: IoT Sensor Network

Requirements: <1mW power, months of operation, periodic updates

* Scenario C: Mobile Application

Requirements: App store distribution, diverse devices, offline capability

## Optimization Effectiveness:

## Resource Constraint Impact:

## Development Trade-offs:

## Real-world Deployment:

## Future Evaluation: