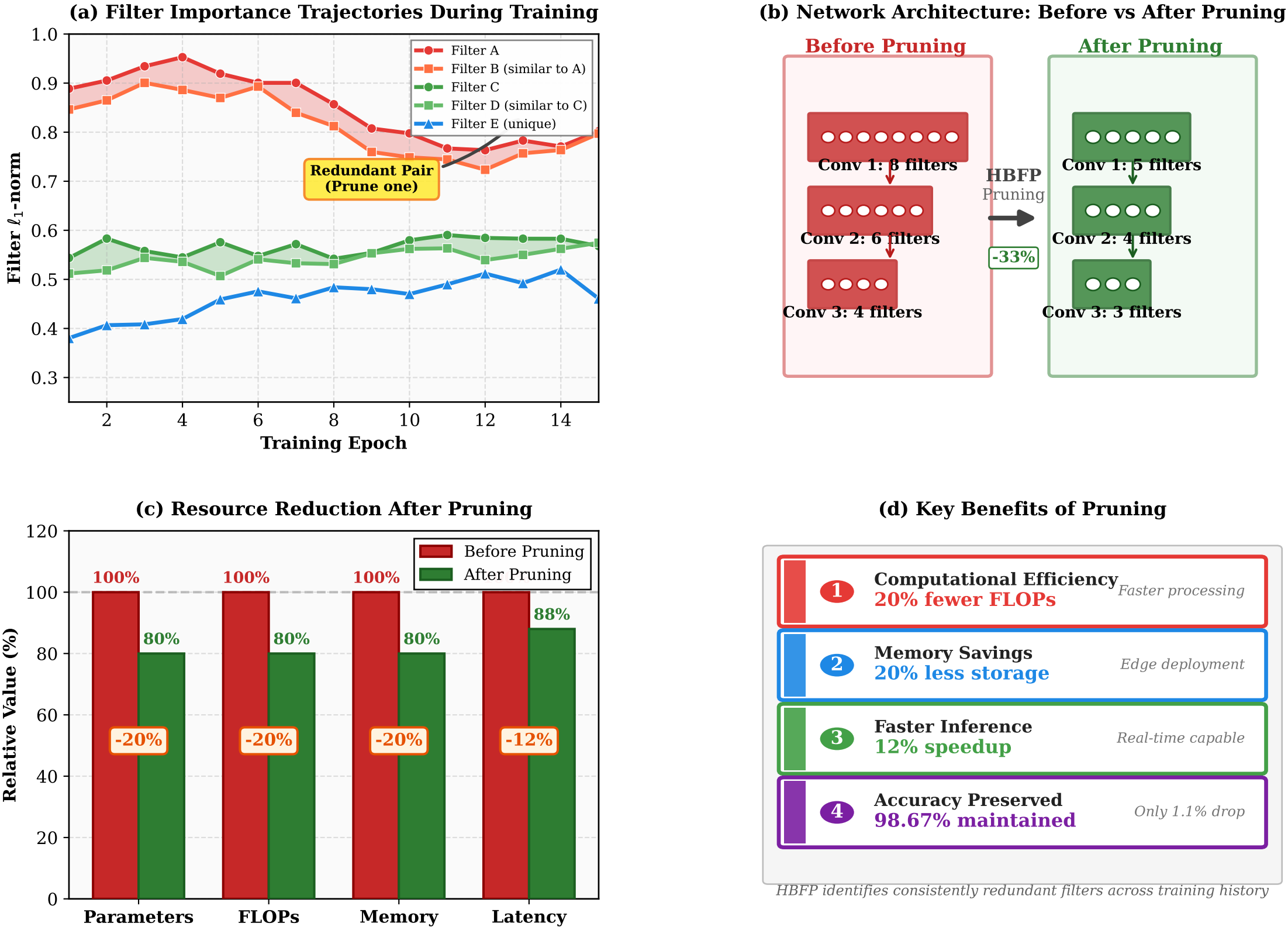
(a) Filter Importance Trajectories During Training
Filter A
Filter B (similar to A)
Filter C
Filter D (similar to C)
Filter E (unique)
Redundant Pair
(Prune one)
Filter ℓ_1-norm
Training Epoch
(b) Network Architecture: Before vs After Pruning
Before Pruning
After Pruning
Conv 1: 8 filters
Conv 2: 6 filters
Conv 3: 4 filters
HBFP
Pruning
-33%
Conv 1: 5 filters
Conv 2: 4 filters
Conv 3: 3 filters
(c) Resource Reduction After Pruning
Before Pruning
After Pruning
Relative Value (%)
100%
80%
-20%
88%
-12%
Parameters
FLOPs
Memory
Latency
(d) Key Benefits of Pruning
1
Computational Efficiency
20% fewer FLOPs
Faster processing
2
Memory Savings
20% less storage
Edge deployment
3
Faster Inference
12% speedup
Real-time capable
4
Accuracy Preserved
98.67% maintained
Only 1.1% drop
HBFP identifies consistently redundant filters across training history