Spectral methods:  
10 applications and 10 algorithms

App 1: k-median
App 2: Mixture Models
App 3: Constraint Satisfaction Problems
App 4: Learning convex sets
App 5: Matrix reconstruction
App 6: Planted cliques and partitions
App 7: Sparse cuts
App 8: Spectral clustering
App 9: Nullspace embeddings
App 10: The regularity partition

Algo 0: PCA
Algo 1: Cut decomposition
Algo 2: Tensor decomposition
Algo 3: Matrix multiplication
Algo 4: Linear-time low-rank approx.
Algo 5: Constant-time low-rank approx.
Algo 6: The CUR decomposition
Algo 7: Volume sampling
Algo 8: Isotropic random projection
Algo 9: Affine-invariant PCA
Algo 10: Robust PCA