

Traditional Memory representations of Dense Associative Memory (MrDAM) requires introduction of new weights every time a new memory pattern is stored in the network. New patterns must be added as rows to the memory matrix.

cour Method



Distributed representations of Dense Associative Memory (DrDAM) makes it possible to add new patterns without adding new weights. New patterns are entangled in a memory tensor of fixed width. DrDAM's energy approximates the energy of MrDAM using Random Features.

approximates the energies and gradients of

Use more random features Y for better approximations



M reconstructions Error of





Use more random features Y at low temp and high corruption



v approximates memory retrievals of

Energy minimization retrieves same memories in both models





are the random features

inner prod of query features and entangled memory features



noisy query's



Memory tensor T of constant size Y

Once memory tensor T is computed, the original patterns ξ^{μ} can be discarded. New memories can be introduced with additive updates to T!