Arbitrary interaction between network connected objects

Imagine a list of objects of one type , each object characterized by some list of numbers (-dim “spatial” vector ).

Each object is connected (i.e. is a neighbor) to a number of other objects on the list. Each object can interact in a multi-body fashion with all the object it is connected with (short range nearest neighbor interactions). This can be visualized as a factor graph.

Required ingredients:

1. Class representing each type of objects.
   1. Each object can have multiple “features”.
2. Class representing each type of interactions (between same or different object types).
   1. Interactions can be unary (external field-like).
   2. Each interaction needs an energy function descriptor.
3. Adjacency matrices for each type of object-interaction relation.