Hypergraph, Odometer, Linear Integer Programming Templates

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A hyper graph has complexity M^N where: N is the number of Nodes, M is the dimentionality of edges (Can be smaller or larger then N).

Example: A simple fully connected undirected hypergraph has 2^N hyperedges. A N dimentional edge network, fully connected is N^N hyperedges. A sparse, fully connected graph network with dimensionality 2 is N^2 hyperedges.

A network where there is some arbitrary restriction on the size of the network edges by some other relation such as nPc, then the network size might be restricted at: $N!/C! * (N - C)!$

Because of the nature of the non-determinable inter relations of the network, instead of trying to create every representation we leave the customization to the end user. This is simple a mechnizm to advance towards a solution.

As every Hyper Edge represents a NP-Hard or NP-Complete problem space, effecient systems to answer the questions will exploit the nature of the date, not the nature of the structure. Thus this provides the simplest structure, which allows the user to exploit the relations inside the data to direct the odometer vector search enumerators.

This serves to represent the mechanism to index into a space larger then the universe. This allows an external control function to control the direction the odometer will move to.

As hypergraph enumerators are known to be unknownably haltable, they can run forever. They can potentially contain complexity ¿ N^N, we assume the user will return false when the function should stop enumeration.

User beware.