Particle Approach for creating Physics-based Semantic Algorithms

## Types of particles

-particle: virtual or node particle – smallest unit of semantic information. Represent the nodes in the DAG of a semantic structure.

-particle: connection particle, carrier of the attraction force between two (possibly naked) -particles. Represents the arcs in the DAG of a semantic structure.

-particle

-particle: charge particle carries the charge of a -particle which determines if a pair of -particles will repel or attract each other and by what “force”.

-particles: rank particles used to determine the relative order of a structure

-particles

-particles

## Laws governing the creation, merging and splitting and decay of particles

Laws of repulsion and attraction

Particles with opposite charges attract each other. Particles with the same charge sign repel each other.

*Particle eviction with replacement*: it occurs when a particle with similar enough signature to the one being evicted is found in an outer context if the first is attracted stronger to the nearby particles than the one which is being evicted.

*Particle eviction without replacement*: it occurs when a charge of a particle is altered such that the “force” binding the particle to its neighbors changes sign from attractive to replacement.

The idea is to maximize the attraction force in a semantic structure through binding and eviction of particles to it. We should be guided by the structural charges and generated forces. A set of particles with total charge close enough to zero becomes an *independent thought*.

Example:

*John is the father of Sam. Julie is the mother of Sam. If a person is your father and another person is your mother then you are their son.*

V-particles are rearranged together with A-particles into a DAG via the laws of repulsion and attraction

Conservation laws

Conservation of charge

Conservation of color

Conservation of charm

Conservation of energy

Conservation of impulse

Conservation of momentum

## Process for dressing naked particles

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