Concepts in Artificial intelligence

Notation

Thought Particle – a construct which is does not containg start symbol and end symbol and it may be mapped to a stored thought particle.

Thought – a construct with a starting symbol and ending symbol which can be evaluated against a stored thought by the semantic discriminator.

Thought Representation

– a thought particle is a piece of a thought represented by an dimensional vector where

A thought T is a construct of attached to each other thought particles represented by a directed graph in which the vertices are the thought particles and the connections between them are given by the set of connection particles where . Note that the connectivity between the particles models more subtle nuances in the semantic value of the whole thought compared to similar one.

Let us consider an example:



*I am Dimitar. My wife is Mieko. My daughters are Hanna and Emily.*

Figure 1: Possible representation

-> “***I***”

-> “***am***”

-> “***Dimitar***”

-> “***.***”

-> “***My***”

-> “***wife***”

-> “***is***”

-> “***Mieko***”

-> “***.***”

-> “***My***”

-> “***daughters***”

-> “***are***”

-> “***Hanna***”

-> “***and***”

-> “***Emily***”

-> “***.***”

We will use the function to denote the textual representation of the particle . For instance = “***I***”

Each thought particle is represented by its magnitude and direction .

Semantic Value of a Thought

A Thought is represented by its Thought Graph. There is no intrinsic semantic value associated with a Thought Graph. Instead, for a pair of thoughts we can obtain a semantic distance which is not static but dynamically evolves as more thoughts are stored in the repository and the thought discriminator internal state is modified in the process.

Building Thought Graph

Adaptive algorithm for inference of the components of the thought graph.

Start with the default representation of all particles shown on Figure 1.

Let us assume that there are already processed and analyzed thoughts:

Figure 2: Stored thought

*I is a personal pronoun. Personal pronoun is a simple substitute of proper name of a person.*

The built graph for the stored thought may look like:

One can see that , , ,

We are going to build and train semantic discriminator which will accept a thought and thought . This discriminator will produce the semantic distance between and .

Let us denote it with . We expect for a properly trained discriminator to produce small value when = and = as = “**.**”.

Coalescing of Thought Particles

Let = , =

Then =

Coalescing of Thoughts

Let = and =

Then =

=

If then we are going to refer to as .

Updating Semantic Discriminator through training

Naïve approach

Let us have repository with stored thoughts , , , ,