

Intelligence, a definition

The capability of a system to adapt its behavior* to meet its goals in a range of environments. It is a property of all purpose-driven decision makers.

– David

Fogel

* implement decisions

Definition of Computational Intelligence

A methodology involving computing that exhibits an ability to learn and/or to deal with new situations, such that the system is perceived to possess one or more attributes of *reason*, such as generalization, discovery, association and abstraction.

Silicon-based computational intelligence systems usually comprise hybrids of paradigms such as artificial neural networks, fuzzy systems, and evolutionary algorithms, augmented with knowledge elements, and are often designed to mimic one or more aspects of carbon-based biological intelligence.

Computational Intelligence

Computational intelligence comprises practical **adaptation** concepts, paradigms, algorithms and implementations that enable or facilitate appropriate actions (intelligent behavior) in complex and changing environments.

Good candidates for CI

- Fuzzy, imprecise or imperfect data
- No available mathematical algorithm
- Optimal solution unknown
- Rapid prototyping required
- Only domain experts available
- Robust system required

Hints

- Acquire basic knowledge before experimenting
- Pay special attention to data representation and preprocessing
- Components such as ANNs can be on “front end,” back end,” or in middle
- Combinations of concepts, paradigms, and architectures are feasible, but can be difficult to implement successfully