Glossary

A

Affect *(Thesis)* • Regarding an emotional system, it is the valuation that a system makes concerning some element in its environment (this element is denoted as object by [54]).

Action Readiness *(Thesis)* • State to which a system moves, in order to adapt its behavior to a critical environment and the subsequent requirements.

Action Tendenct *(Thesis)* • Propensity of a system to behave under specific forms, and that is intrinsically related to its intrinsic characterization.

Artificial Consciousness *(Thesis)* • It will allude to any type of information abled to be exploited by any rational system.

Artificial Emotion *(Thesis)* • (1) Related to the experience: general name used to refer the complete experience of emotion in some artificial agent. (2) Related to the broad meaning of the concept: Emotion is a meta–adaptive distributed engine intended to endow transversal–adaptiveness, in order to provide the means to control the systemic equilibrium of the systems.

Agent, Rational [223] • Fundamental to the approach to artificial intelligence. It is referred as an artificial agent that always maintains an interaction with the environment by means of sensors and actuators. Rational agents accomplish some type of performance measure in order to: (a) interact with their environment, and (b) assess consequences that concern each change caused on this environment. With this assumption, a *rational agent* is defined by accepting that *rationality* depends on four things: (a) the performance measurement, (b) the agent's prior knowledge, (c) the actions knowledge, and (d) the sequence of perceptions till the current time.

Agent, Error–Reflex *(Thesis)* • c.f. Error–Reflex agent.

Appraisal *(Thesis)* • Function aimed to estimate fitness and aptitude in key events for the system (a.k.a. cognitive–based emotional assessment). Under [5] it refers to a progression of events related by the work of perception that are responsible of emotion arising [5] (this term was introduced by this author).

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Appraisal Dimension *(Thesis)* • Each of the N dimensions of emotional assessment in a system. They are conceived under an analogous view to that of a vector space, and it is denoted by *a–Dimension*.

Architecture *(Emotion Science)* • Termino relativo a.

Architecture, Reference [257] • Set of principal design decisions that are simultaneously applicable to multiple related systems, typically within an application domain, with explicitly defined points of variation.

Architecture, Software [257] • Set of principal design decisions made about a system.

Appraised Subsystem *(Thesis)* • It is the system formed by a set of independent components inside of a system, whose interaction might become critical under the requirements of some emotional dimension (c.f. Definition 5.5 in Chap. 5).

Arousal [54] • It denotes the presence of signs of autonomic nervous system activation (...) which are reasonably covered by lay terms such as excitement.

Arousal, Computational *(Thesis)* • *Arousal* is the state of exciting by means of which some essential processes are triggered in order to optimally face a punctual situation, and constitutes the ground for emotion [5, 54, 107, 118]. Arousal state is conceived in artificial systems as interruption states, that is, a state in which alerts aware the system about the requirement of immediate attention regarding some source that is establishing high-priority.

Autonomous System *(Thesis)* • System that works under the meta–objective of continuing its systemic equilibrium. System featured by its ability to maintain its systemic equilibrium.

Autonomy *(Thesis)* • Ability of a system to generate its own rules and self–manage without external actions. When *autonomy* refers to agents, this generation of rules is grounded by the influence of its systemic equilibrium.

Aware [259] • The scanned symbol is the only one of which the machine is, so to speak, directly aware (c.f. Artificial Consciousness).

Awareness, System *(Thesis)* • Function by means of which a system recognize its own capability related to its state.

B

Behavior [259] • The operation of any machine, which is intrinsically determined by its configuration (i.e. arrangement in which artifacts are interconnected).

C

Chunked–Memories *(Thesis)* • Computational artifact that we situate inside or further in the system, and that represents solid pieces of memories as a source of knowledge for the system.

Cognition, Computational *(Thesis)* • Process by means of which the system acquires, update or exploit knowledge related to the relationship between the environment and itself.

Cognitive Architectuse [106] • Blueprint for intelligent agents. It proposes (artificial) computational processes that act like certain cognitive systems, most often, like a person, or that act intelligent under some definition. Cognitive architectures form a subset of general agent architectures.

Computational–Concern *(Thesis)* • It refers a collection of functional artifacts used to build a metric with which to measure a concrete *a–Dimension*. This measure is conceived in terms of positive or negative distance to those matters of importance for that *a–Dimension*, and is denoted by *c–Concern*.

Computational Emotion *(Thesis)* • Computational work aimed to obtain the complete set of artifacts required to build the emotional experience into some artificial agent (i.e. this experience is denoted in this thesis by Artificial Emotion).

Computational emo–like Goal *(Thesis)* • The value that uses the system to measure the positive or negative error regarding some *c–Concern* (it is denoted by *c–emoGoal*).

Computational–Image *(Thesis)* • It will allude to patterns of states concerning a set of system artifacts (it is denoted by c–Image).

Computational–Map *(Thesis)* • It will allude to patterns of relationships concerning a set of system artifacts (it is denoted by c–Map).

Computational Process of Emotion *(Thesis)* • Process by means of which the emotion–Object is built (denoted cp–Emotion).

Computational Process of Feeling *(Thesis)* • Process by means of which the emotion–Feeling is built (denoted cp–Feeling).

Consciousness, Artificial *(Thesis)* • c.f. Artificial Consciousness.

Context [62] • Any information that can be used to characterize the situation of a software entity.

Context, Bounded [74] • BOUNDED CONTEXT refers the delimited applicability of a particular model.

Control *(Thesis)* • Process during which are taken actions to achieve specific effects on a concrete system.

D

Domain *Computer Science* • A sphere of knowledge, influence or activity (c.f. glossary in [74]). Also the problem space that defines characteristics, vocabulary, motivation (why this domain exists), etc. (c.f. [257]).

E

Embodiment *(Thesis)* • Attribute of a system that imply physical realization (it may refer to either realization of processes or body structure).

Emotion, Artificial *(Thesis)* • c.f. Artificial Emotion.

Emotion, Computational *(Thesis)* • c.f. Computational Emotion.

Emo–Inner–Object *(Thesis)* • Computational artifact situated inside or further in the system, which represents those relevant changes that an external object causes on the system concerning emotion–based references.

Emotion–Object *(Thesis)* • Computational artifact that we situate inside or further in the system, which accumulates the information about the emotion–based consequences that an external–Object is causing on the system.

Error–Reflex agent *(Thesis)* • Software agent aimed to monitor the inner state of *AGSys*, concerning the requirements imposed by some emotional dimension.

Environment *(Thesis)* • General term used to refer the surroundings or conditions in which a system operates.

F

Feeling–Object *(Thesis)* • Computational artifact situated inside or further in the system, which represents an evolution of the *emotion–Object*.

G

Goal *(Thesis)* • Feature liable to vary that constraints the transition of systems from a current state, to another state related to the accomplishment of a required value of that feature.

I

Information *(Thesis)* • It refers in artificial systems to exploitable knowledge.

Inner–Environment *(Thesis)* • Software–based description in order to obtain an environment within which *ESys* may accomplish its missions, related to emotional requirements. Consequently, it will be constituted by those values that *Error–Reflex agents* provide.

Inner–Object *(Thesis)* • Computational artifact situated inside or further in the system, which represents descriptive aspects of the external objects as a source of knowledge for the system.

K

Knowledge *(Thesis)* • General term used to denote the set of exploitable models that a system integrates.

M

Model *(Computer Science)* • Model is a representation of a real world process, device or concept (c.f. IEEE Standard 1233–1998 (R2002)]). Also, model is an approximation, representation, or idealization of selected aspects of the structure, behavior, operation, or other characteristics of a real-world process, concept, or system (c.f. IEEE 610.12-1990).

P

Perception *(Thesis)* • Generally speaking, it refers a recursive process of information integration. Specifically, this information is related to the sensory acquisition plus the effects caused within the system and the relationships among these effects.

R

Recursive Loop *(Thesis)* • Recursive functional artifact, aimed to provide an explicit interpretation of the object by means of successive executions of the same conceptual loop (it is denoted by *R–Loop*).

S

Scenario *(Computer Science - IEEE Std 1362-1998)* • (A) A step–by–step description of a series of events that may occur concurrently or sequentially. (B) An account or synopsis of a projected course of events or actions.

Somatosensory System, Computational *(Thesis)* • Set of connected interruptions triggered by a system.

Survivability, Artificial system *(Thesis)* • The state or fact of a system of continuing its systemic equilibrium, concerning circumstances that threaten its integrity.

System *(Computer Science - IEEE Std 1362-1998)* • A collection of interacting components organized to accomplish a specific function or set of functions within a specific environment.

T

Tendency, Emotion *(Thesis)* • Inclination of a system to respond under specific emotional characteristics. In artificial systems this is defined by design and potentially modified by means of machine–learning processes.

V

Valuable–State *(Thesis)* • Denoted by (v–State), it refers to the computational artifact which represents a midway step that acts as an intermediate stage between the *emotion–Object* and the *feeling–Object*.

Declaration

I herewith declare that I have produced this thesis without the prohibited assistance of third parties and without making use of aids other than those specified; notions taken over directly or indirectly from other sources have been identified as such. This work has not previously been presented in identical or similar form to any other Spanish or foreign examination board.

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