Universidad Carlos III de Madrid

OO/UC3M/61- INTERACTOR: NATURAL INTERACTION PLATFORM

Interactor is an Interaction Platform based on Natural Interaction (human-like) techniques developed by the *Laboratorio de Bases de Datos Avanzadas (Labda)* at *Universidad Carlos III de Madrid*. It enables to implement with little effort a corpus-based Task Oriented Interaction Domain for bipartite dialogues. Thus it assumes an application and provides access to it through Natural Interaction.

Description and special features

Interactor can be implanted onto a computer system holding out a set of tasks. This platform will receive user interventions (represented through semantic structures), update interaction state, and handle the interaction in a human-like way. For this, a wide range of interface components can be inlayed into the platform (voice recognition/synthesis and Natural Language Processing, 3D avatars, GUI, etc).

Through interaction, it invokes the execution of some task(s) and feeds the interaction back with its (their) results. When it finds the system should take the floor and express something, it constructs system's interventions (represented through semantic structures) and provides them to the interface components.

Besides, its Situation Model gathers knowledge on spatio-temporal features and objects within the interaction domain, and it is able to receive and process information about the user's situation. It also provides situation-based services.

Interactor dialogue management is composed of four agents implemented in Java, running in a custom-made multi-agent platform (Ecosystem). The situation component is implemented trough two agents (also in Java) and based on a spatio-temporal database. The rest of the *Interactor* system (other agents) is also implemented in *Java*. All the knowledge bases and the mentioned databases are set on the *OracleTM* 10g DBMS.

Innovative aspects

Yet there are starting to appear some human-like based interaction systems, few rely on advanced cognitive architectures for Natural Interaction as this does. In addition, Dialogue and Circumstances processing have special prominence in this system. On one hand, Threads Dialogue Model enables robust interaction, with intentional joint action techniques and advanced turn management. On the other hand, very few interaction systems count on a Situation Model (few prototypes, none commercial). Such model enriches interactive reasoning with the circumstantial aspect, apart from the situational services it can provide. In addition, this Situation Model is empowered by spatio-temporal database technology, ensuring versatility, scalability and efficiency.

Finally, multi-agent technology support provides simultaneous processing of all the involved knowledge models and their joint contribution to the interaction.

Competitive advantages

It eases the interaction with computer applications to anyone not used to interact with computers. Besides, it provides an alternative interaction way (in parallel to some other of the classical type) for users preferring human-like interaction. Finally, corporations holding such systems might obtain an added value in an innovative ahead-of-time company image.

Technology Keywords

Artificial Intelligence (AI); User Interfaces, Usability; Human Language Technologies

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