# Attention Based, Naive Strategies, for Guiding Intelligent Virtual Agents

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## 1 General Aspect

The AtGentive project[1,2] focuses on the support of attention in learning environments. To achieve this objective the system analyses the learners' computer activities and physical states and, on the basis of this analysis, it generates interventions. Such interventions either supply learners with information useful to support their current attentional focus, or are aimed at attracting the user's attention to new foci.

The AtGentive system communicates with the user using a wide range of modalities including an IVA controlled by an external Reasoning Module (the system's component generating the interventions). The IVA's behaviour is guided by parametrized scripts. The scripts' parameters (mood, strength) are computed by the Reasoning Module based on models of the users and of the tasks they are performing.

## 2 The Reasoning Module

The Reasoning Module is in charge of processing the data sent by the application and other external components in order to produce interventions aimed at supporting users' attentional processes. These interventions are used for providing suggestion to the application and triggering the IVA (see figure 1).

Several studies have demonstrated that human's feelings towards virtual agent's interventions play an important role on whether the help and suggestions will actually be taken in consideration by the user. Supplying useful information is a necessary but not sufficient condition for a successful interaction. A study conducted on the intervention types generated by the AtGentive system suggests that, in order to establish productive interactions, the IVA should be likeable and offer advice that is timely and believable[3].
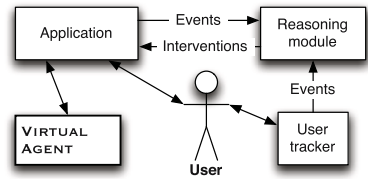


**Fig. 1.** General communication between the components

AtGentive systems select the time of the intervention depending on the desired impact on the user's current attentional state[4]. Several strategies can be used to setup the strength and mood of IVA's interventions (empathy, positive reinforcement...) based on the learning method employed in the application. The AtGentive system chooses the mode of intervention depending on the user activity and the information that needs to be communicated.

## 3   The IVA

The purpose of the IVA Module is to receive and process requests for IVA interventions according to a previously defined general intervention model and to adapt these interventions to different environments and graphical contexts. This module is integrated in the application in a way that clearly separates the content of IVA's generic interventions from application processes, and also separates the necessary references to graphical user interface from the generic intervention data.

Two components constitute the AtGentive Embodied Agent Module: the script generator which produces a page describing an Embodied Agent intervention, and the script player which is responsible for playing the script in the browser.

An intervention of the embodied agent is described by an XML script (or template script). It is composed of speech, animations, expressions and other actions. Any action in the script may be assigned a name (as an XML attribute) so that it can be changed from a context script (another XML file). Context scripts control the selection of actions in template scripts, according to parameters mood (of the virtual character) and strength (of the intervention).

## References

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