

## Cooperative Parsing in SMABO

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## 1. Introduction

Our SMABO system is an experimental trial which aims to realize a distributed intellimedia handling environment. It serves in this research as a testbed of DAI techniques which are used to address the gesture-based parsing issues in it. Gesture is treated as visual command related to the operation on media object.

Efficient parsing is necessary and essential. However, we will discuss below that gesture-based parsing is quite different from other conventional parsing and visual language interpreting as well, largely due to its dependency on referent objects and their semantically coupling. Parser itself is insufficient for fulfilling the parsing tasks. We propose the cooperation between parser and dynamic model manager, which maintains the semantic model of media objects, and describe the communication between two components.

In response to the cooperative work and with the consideration of efficiency, we exploit cache mechanism to reduce the duplicate communication. Also we adapt the blackboard, and integrate so called Supporting Object ID(SOI) into nodes of blackboard.

## 2. Examining gesture-based parsing and proposals

Gesture is not only visual language but also visual command, for a parsing result will call forth the execution of certain command, either UI operation or modification of object relations.

The most feature we think of gesture is its

dependency on referent objects. A gesture is meaningful only when special objects are referred. On the other hand, meaning of same gesture varies with the referent objects. Gestures acquire their semantics from relationships to referent objects.

Referent objects should include multiple abstraction levels, from the media object to the combination of media object and gesture.

Obviously, model of referent objects could not be predefined, and they will change dynamically as well. Parser lacks of knowledge of referent objects. As a solution, we propose the cooperative work between parser and model manager.

Also due to the dependency, nonmonotonic events such as deletion of an image always require updates to intermediate parsing. We adapt the basic blackboard node structure, and integrate so called Supporting Object Id (SOI) into nodes of blackboard.

## 3. Cooperation between parser and model manager

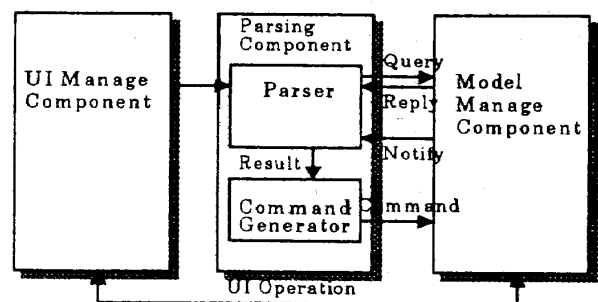


Figure1: Cooperation between components

We adopt component design mode. (Figure 1)

