AII For Heterogeneous Systems With Efficient Retrievable KB Objects

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ABSTRACT New heterogenous design techniques are presented with software agents and mediators applying visual knowledge sources modeled by multi-boards. Agent-retrievable KB and WWW interfaces are presented. The stages of conceptualization, design and implementation are defined by AI agents and Mediators. Intelligent objects, message passing actions, and implementing agents are defined by syntactic constructs, with agents appearing as functions. By defining Agent Events activities are computed for the AII[1] agents. The proposed AII techniques provide a basis for automatic implementation and retrieval by Intelligent Trees. Interporatability is defined by mediators implementing objects and agents. The object level definition for individual modules are turned to executable programs by which KB objects are retrieved and implemented. KB design with objects retrieves data objects by signaling a module via agents. Efficient standard stored data retrieval techniques are, of course, applied at implementation time. Retrieval can be applied to WWW with visual knowledge source conceptual modeling. KR with key coded diagram functions for models is applied to the KBs.

1. KR and KB

KR applied in our papers is on diagrams for models are defined by assigning truth values to predicates with known truth values at each stage and generalized Skolem functions [2] to represent those predicates whose truth values are not known. Thus we define diagrams in which predicates are replace by their corresponding Skolem functions. Note that the G-diagram for models, as in the approach by Nourani ,e.g.[2], also include all the information required to define possible worlds. KR diagrma functions have been applied to encode visual KB. The functions Fi's on the figure are diagram functions applied with retrieval agents. Si's are data reas keyed onto with the diagram functions.

2. RETRIEVAL ,AGENTS, AND VIRTUAL GROUPS

To define *retrieval agents* let us employ figure 1 and view the objects Mi's as being on a virtual group tree (VGT). The way the agent message paths are designed a virtual taxonomy tree is defined. Furthermore, the object class concepts define a physical object dependency for the Mi's and the kernels. Thus the *virtual retrieval path* for a data item is determined as follows. For a data item di defined for an object Mi. VRP(di)= VirAgnt(Mi) <<< Root(Mi) <<VGT(Mi) where <<< indicated agent message path to the Root of Mi in the VGT; << indicates the subclass and intelligent object concept hierarchy in the virtual taxonomy tree. An AE computing event which activates an agent affect ontologys [1] in ways unknown to the AE and to its originating resource, its content, model, and domain. Thus AEs necessitate an ontology update. Accommodating the update is a challenging problem for AII[1] then an AE event is encountered by the software system the retrieval agent paths have to be changed as ontologys are redefined. Thus the retrieval problems for multiagent systems are new area deserving a thorough treatment. We have only defined the basis for a future project. The relations between taxonomies, abstract data and objects had been defined by our [2] but not involving AI agents.

3. VISUAL KNOWLEDGE SOURCES

We have presented a preliminary view towards visual computing paradigms in 1995 which could provide a basis for computing with visual knowledge sources. The Double Vision Computing artificial intelligence paradigm Nourani [AIS-95. Karsruhe] is a problem solving paradigm with <object coobject> pairs and multiagents defined on the pair, such that agents from the object and co-objects cooperate for problem solving on boards. The world is viewed by dual pairs of possible worlds, with agents cooperating on boards, as a model comparable to vision. Modeling visual knowledge sources with boards and agents with context abstraction the knowledge source models are passed onto conceptual models. The techniques to be presented are to be applied to mobile multimedia. Communication and computation by multimedia visual-object languages and rapid multimedia WWW interfaces and retrieval. The characteristics of an Active DMBS supports definition and management of ECA-rules, e.g. Event, Condition, and Action. Hence an ADMBS must have means to define ECA's. An ADBMS must support rule management and rulebase updates. It must carry out actions and evaluate conditions. An ADBMS must represent information in ECA-rules in terms of its data models. The IM computing paradigm provides a basis for designing mutlimedia ADBMS's. The IM computing paradigm allows the design for multimedia ADBMS to apply agent computing to ADBMS, to base an ADBMS on multimedia agent computing, and to carryout meta-level reasoning and KB with multimedia intelligent objects.

[1] Nourani,C.F. AII and Heterogeneous Software Design, May 10, 1995, MAAMAW'97, Eighth European Workshop on MODELLING AUTONOMOUS AGENTS IN A MULTI-AGENT WORLD May 1997, University of Karlskrona/Ronneby, Dept of Computer Science and Business Administration Ronneby, SWEDEN.

[2] Nourani, C.F., "Free Porof Trees and Model-Theoretic Planning,"AISB, Sheffiled, April 1995.

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