

Business Modeling and Forecasting

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Abstract

A new view to business computing for MIS and commerce applications with agent computing is presented. Interactions amongst heterogeneous computing resources are via agents as visual multimedia objects. Applications to dispersed and interdependent business organizational management models are depicted. Forecasting with means-ends parameter modeling is presented.

1. Introduction

A new view to business computing for certain MIS and commerce applications with agent computing and intelligent multimedia is presented from (Nourani 98). Interactions amongst heterogeneous computing resources are via objects, multiagent AI, and design language abstract monitors. The applications to business based on the basis put forth for modular object languages are briefed. Intelligent Objects from our 1994 papers are reviewed introducing new business applications with agents. Software agents are specific agents designed by a language that carry out specified tasks and define a software functionality. Most agents defined by our examples are software agents. With a rapid advancement of technology in recent times and a wide application of object-orientation principles in various diverse sectors of industry, the concept of business object was developed.

2. Intelligent MIS and Business

The new MIS as an academic and business field is presented since (Nourani 1998). Some specific aspects are depicted on the enclosed figure. Software agents are specific agents designed by a language that carry out specified tasks and define a software functionality. Most agents defined by our examples are software agents. New academic MIS essentials might be defined since there is agent computing, cyberspace computing, intelligent multimedia and heterogeneous computing (Nourani 1998).

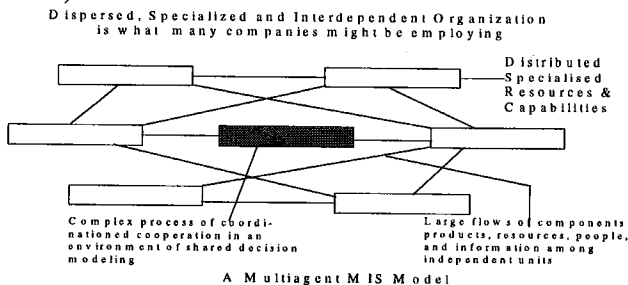


Figure 1 Intelligent MIS goals see for example (Gen-Nils 87) are applied to business planning (Nourani 1998) and OR.

3. Intelligent Objects and Multiagent OOP

The IOOP project develops new techniques, and linguistics constructs for programming with objects implemented by agents, based on a theory of computing with trees on signatures carrying agent functions on trees (Nourani 96b). The agents are designated functions with specified functionality and message syntax. Thus context can be carried at syntax. We present new techniques and languages for object level programming with intelligent trees implemented by agent functions. We show in IOOP and brief in the present paper, how a two-level language paradigm and intelligent object level programming can handle what otherwise is a complicated computing phenomena. There are objects as situated automata, for which abstract syntax trees and a computing theory merging with the current practice of programming theories are quite impossible.

4. Intelligent Business Objects

A *business object* is a representation of something that is active in business domain, with at least the essential information on its business name and definition, attributes, behavior, relationships, and engagement rules. A business object is an application-level entity, developed completely independent of its application areas. A set of attributes describes the state of the entity, and there is a specification for the actions to take concerning the entity itself. (Nourani-Lou 98) provides the basis for a simple methodology that will enable semi-technical personnel to develop and apply business objects in medium- and small-sized businesses within a relatively short time span, with relative ease and low cost. IOOP (Nourani-95b) is a recent technique developed by the author combining AI and software agents with OOP.

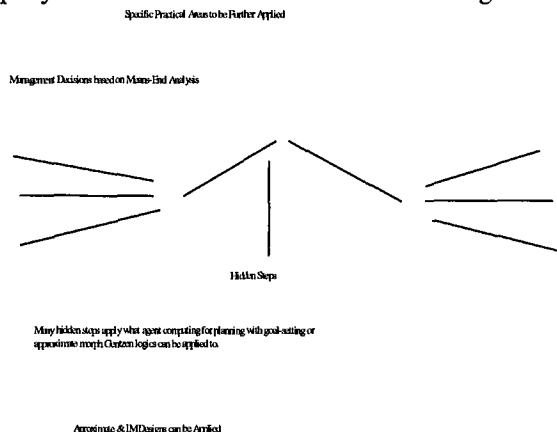
5. The Morph Gentzen Logic

The IM Morphed Computing Logic Logics for multimedia computing is a new project with important applications since (Nourani 96a,97a). The basic principles are a mathematical logic where a Gentzen or natural deduction systems is defined by taking arbitrary structures and multimedia objects coded by diagram functions. Morph Gentzen (Nourani 97a) admits new sequents with the

Morph Gentzen rules. It has new logical principles and foundations. By trans-morphing hybrid picture's corresponding functions a new hybrid picture is deduced. The techniques can be applied to arbitrary topological structures. Multimedia objects are viewed as syntactic objects defined by functions, to which the deductive system is applied. Thus we define a syntactic morphing to be a technique by which multimedia objects and hybrid pictures are homomorphically mapped via their defining functions to a new hybrid picture. The deduction rules are a Gentzen system augmented by Morphing, and Trans-morphing (Nourani 96b). The MIM TransMorph Rules- A set of rules whereby combining hybrid pictures p_1, \dots, p_n defines an Event $\{p_1, p_2, \dots, p_n\}$ with a consequent hybrid picture p . Thus the combination is an impetus event. The Model theory is defined from Intelligent syntax languages (Nourani 96b, 97b).

6. Business Forecasting

IM's basis for forecasting is put forth at preliminary stages. The idea is to apply Morph-Gentzen logic (Nourani 97a) as a basis for intelligent multimedia forecasting. The figure indicates a graphics sequent for predicting the fourth quarter earnings from the second and third combined with a market condition graph. The way a market condition graph is designed is a propriety issue. It is obtained by Morph Gentzen sequents from known stock market parameters. There are many hidden steps in goal setting and means-end analysis to reach decisions with Morph-Gentzen approximations to agent parametered graphs to macro-market parameters based on specific company MIS model as in Figure 1.



Keywords Design with Software Agents, Computing Agents and Business Objects, Multiagent AI Techniques, Intelligent Business Objects and Design, Intelligent Forecasting, Intelligent Multimedia, Multimedia Objects
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