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An Application of Cognitive Emotional Agent Architecture to Corporate Human Resource Management

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Introduction

Case based learning, as proposed by Roger Schank was introduced into corporate training methodology as an outcome of cognitive science research (Schank, 1995). The authors propose to introduce cognitive science research results not only to the corporate training service, but also to the corporate Human Resource Management (HRM) system.

The Corporate HRM system consists of evaluation as the central sub-system, as well as recruiting, Career Development Program (CDP), payment, promoting, and learning sub-systems. A problem in corporate HRM is the lack of a common HR evaluation data format shared by all companies. Another problem is the difficulty to describe a business process for HR evaluation. To achieve a consensus in HR evaluation conflicts, between an evaluator (e.g. manager) and an evaluatee (March & Simon, 1993) a concept introduced by March and Simon is often used..

To solve those problems in this research we developed a cognitive emotional agent architecture which can be used to describe HR evaluation categories. We also introduced an ontology of HR evaluation categories to connect the knowledge representation of the agent architecture.

A business process simulator is also being developed to simulate the agent architecture.

Cognitive Emotional Agent Architecture

A cognitive emotional agent architecture has been developed based on Sloman's H-CogAff architecture and 12 hypothetical brain functional modules (Sloman et al., 2005; Noda, 2006). The reason why the emotion architecture is the basis of the HR model is that recently emotional factors have been identified to be critical in the HR evaluation domain (Spencer & Spencer, 1993; Goleman, 1998). Two HR evaluation concepts, emotional intelligence and competencies both hypothesize emotional factors as a basis of HR model's traits.

Human Resource Evaluation Ontology

Our proposed Human Resource Evaluation Ontology consists of 22 classes, 79 instances, 32 attributes and 10 variables (Noda, 2006). It has been connected to the agent architecture's goal-plan type knowledge representation with the help of the ontology editor Protégé.

Business Process Agent Simulator

The Business Process Agent Simulator is being developed with the social agent simulator SOARS. SOARS adopts 'agent', 'role' and 'spot' as the core description concepts. The HR model has been developed with the help of physical 'spots' and social 'agent' concepts. The agent's knowledge representation is implemented by using his social 'roles'.

Recruiting Interview Simulation

A recruiting interview simulation is conducted as a pilot simulation of the HR evaluation process. In the simulation, anxiety and depressive emotion was interpreted as variables of the HR evaluation categories (e.g. behavior and communication skill) and the validity of the agent as an explanatory model of HR model has been tested.

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