KNOWLEDGE BASED & INTELLIGENT SYSTEMS

THE UNIVERSITY OF NEWCASTLE AUSTRALIA

Research Focus

The Knowledge Based and Intelligent Systems laboratory represents part of the knowledge supply chain system that has the potential to improve Australian industries' performance in all aspects of energy related issues and decision making. The laboratory assists companies in leveraging energy knowledge and, by doing this, contributes to economic and environmental benefits of the wider community.

"The only source of knowledge is experience."- Albert Einstein (1879-1955)

Background

We learn through experience. Our brain stores knowledge in terms of keeping our own experience from past situations as well as adding knowledge by learning from experiences of others. All these experiences, over generations, are stored in an individual's DNA that carries this information into the future. Our idea is to develop an artificial system, an architecture that would support discovering, adding, storing and sharing knowledge in organisations (companies) through experience, in a way similar to that which happens in nature. We propose a novel approach in which organisational knowledge is represented by Set of Experience, and is carried into the future by Decisional DNA (see figure)

Current Projects

Currently the Knowledge Based and Intelligent Systems group is enabling the Priority Research Centre for Energy to manage information. When considering the research output of the PRCfE, it is easy to realise that in the vast majority of cases two distinct 'products' can be identified. These will be data and information related to intelligent, safe and efficient use of energy. To fully utilise this output in real life social, economic and environmental context, the third product is needed: knowledge. Data is used to create information which, in turn, can be used to help create knowledge.

This cycle can be seen as a filtering process that takes a mass of data, transforms it into a reduced, but more meaningful, information set which, in turn, can be used to create or generate knowledge. In addition, as the data is 'transformed' to knowledge, its value increases and there is a better chance that it is actually used during the decision processes by managers whose business is energy.

The role of the group is to support this transformation process, by developing a smart knowledge management platform that can be used to administer the flow of data, information and knowledge generated within the centre.

The platform would include all stages of knowledge management process from acquisition through storage and usage. It will act as an integrating mechanism for the diverse research areas involved in the centre making sure that there is no piece of information or knowledge generated in the centre that is overlooked or forgotten.

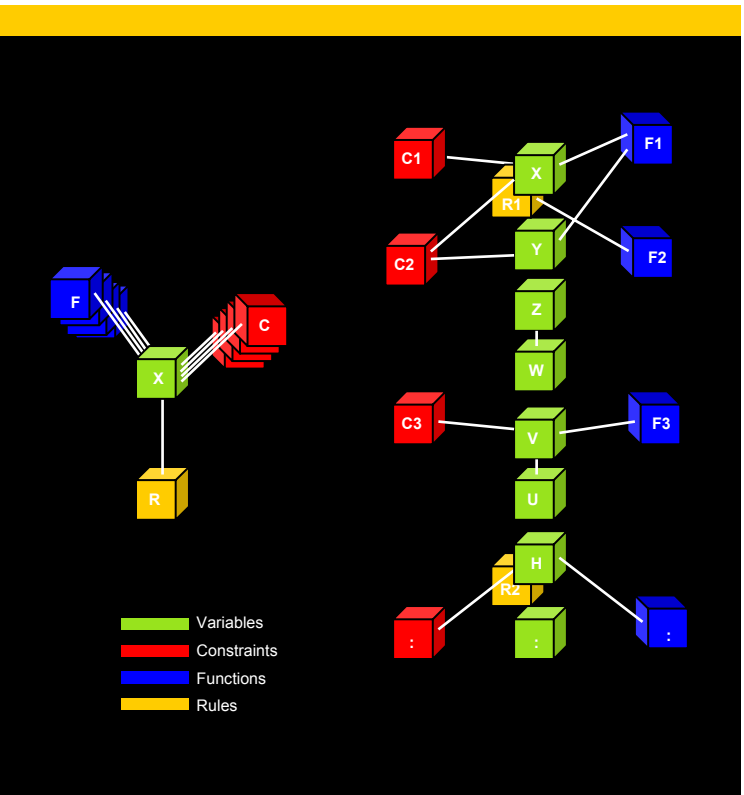

Figure: Decisional DNA building blocks: Set of Experience knowledge representation including variables, functions, constraints and rules

Contact Us

PRIORITY RESEARCH CENTRE FOR ENERGY

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