

BASED ON 'SCENARIOS-RESPONSE' MODEL OF SECURITY PLANS FOR EMERGENCY MANAGEMENT SYSTEM OF DATABASE DESIGN

Ding Dan and Li Xiaoran

Institute of Management Information System, Beijing JiaoTong University, ShangYuanCun No.3, Beijing, China

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Abstract: This article on plans to improve the design of library-type research, based on the existing research of "scenario" theory, focusing on finding how "Scene" elements change with the sudden through the corresponding mathematical model, and forming the corresponding model (that is the "scenario" network). Through sorting the analyzing the events that have occurred, extract "Scene" elements, Enrich library plans, so that enhance security management system for real emergency warning capacity.

1 INTRODUCTION

1.1 Realistic Background

In recent years, with rapid developing of the era, unexpected events frequent happened home and abroad. How to better respond to emergencies and to manage emergencies has become a major issue. When provides for the convenience of living, there are a variety of their potential for unexpected security problem, such as earthquakes, floods, fires, stampede, locomotive equipment failure, terrorist attacks, traffic accident, car accidents etc. possible incidents. Emergency management system can be seen as a very complex system, contains the current rail transit subsystems of the business, Such as SCADA, BAS, FAS, ATC and AFC system etc. (Liu Guangwu, 2009) So, this will use the Beijing urban rail transit vehicle safety emergency management as a platform, giving improve design to emergency management of the present security emergency plans for intelligent subsystem model library, based on the rising 'scenario - response' model.

Currently, Beijing urban rail transit system has built a comprehensive platform for rail transportation of emergency relief, but mainly based on "Forecast - response" model. For unexpected events, especially non-routine incidents without aura and are complex, always harm seriously. (Li Shiming, 2009) However, using 'scenario - response'

model can make it more flexible to deal with emergency.

1.2 Theoretical Background

For the 'scenario' concept, is still in the stage of extensive debate having no specific conclusion, different researchers have different interpretations. In this regard they have relatively leading research, and applied to many important areas in foreign. Candolin design a context aware framework, which can be performed in the mobile military networks for the pre-task, and get access to a particular situation, provides a solution for the war communication system of the future. (Candolin C, Kari, HH 2003); Grossmann establish an infrastructure for large-scale scenes, classifying and characterizing the data of scenes, as well supporting multiple types of scenarios aware applications, then improve the ability to reuse and share data. (Grossmann M, 2008)

At the same time, some scholars in China also went to study in this area. 'Scenario - response' is corresponding measure forming and developing based on the past events and understanding of the law and convergence. Another statement is it is the process of building a vision by using of scattered blocks and puzzles (the elements of preparedness of the emergency).(Liu Tiemin, 2009) Whereas Professor Wang Yuefei who is Deputy Director of

Automation Departments of Chinese Academy of Sciences said that 'Scenario - response' is a process of conscious change which are Scenario elements to solving Predictable and unpredictable, Known and unknown, Simulation and Can not be simulated situations, for it analysis is more important than the process. Meanwhile, Scenario should also be a collection containing many important parameters.

1.3 Literature Review

Now, in China research for this problem is still relatively empty stage, however, study abroad is relatively mature. Research institutions in developed countries, Such as the U.S. NSF, UK e-Science etc. had many years of research in emergency response mechanism and also established emergency management system which are more influential, as U.S. 'national emergency response system', European EUREKA program in the "major emergency intelligent management system" (MEM brain), Japanese 'Disaster Response System' (DRS) etc.

Professor Huang Jun of Graduate School of Chinese Academy of Sciences state from demand aspect that we need the 'Scenario' method to deal with emergency management of unexpected events that we can not predict the circumstances. Some studies have sucked context concept into the traditional public emergencies to integrated the context and management of public emergencies, hoping that through the process of plan formulation and context of the calling plan to improve operation efficiency of the emergency management system (Xu Youzhi, 2009) Some studies also will construct a static relationship between objects based on the workflow process of the static model and for the emergency control of the dynamic model of workflow and build support for dynamic collaboration across the emergency management system. (Xu Ruihua, 2008)

2 OUTLINE

- Form the 'scene points' to the corresponding 'scene networks' by Neural network model, then find the appropriate solution to the problem from the model database and decision support system.
- Analysis the effect of the emergency plan database to security management system.

- Analysis the application of "Scenarios" model in the library design.
- Concluded that 'scenario - response ' model can improve the practical application of the security emergency management system.

3 METHODS AND APPROACHES

3.1 Overview

In terms of model building, including rough sets and neural network processing section.

- Rough set processing stage: According to rough set of simplified rules and decision rules on the 'scenario' data reduction, structure the initial structure of neural network to facilitate the training of neural networks.
- Good neural network parallel processing, approximation, classification capabilities to deal with such nonlinear problems risk warning, Processing stage through the rough set dealt with the "scenario" data into early warning network, The related 'scenario' data on the impact of events as the 'neurons' and the weight of the combination model (Wang Bo, 2010)

3.2 Model

- Extracted the 'scene' elements from the incident, as entry in the hidden layer neural network to combine mapping after putting out emergency plans. (Wang Chengliang, 2010)

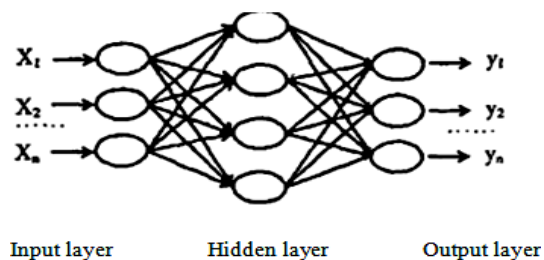


Figure 1: Artificial neural network model structure.

- Nodes of input layer, hidden layer, and output layer are designed totally on demand, the transfer function of neural network using Logsig algorithm, and learning

function using Levenberg-Marquardt algorithm. For this three neural networks, we can get formula for the number of hidden layer units \hat{h} empirical.

$$\hat{h} = \sqrt{n + m} + \alpha \quad (1)$$

$$\hat{h} = \sqrt{n \bullet m} \quad (2)$$

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