

Ontology Construction for Building Fire Emergency Response

Shijing ZHANG, Yongming HE, Wenyan ZHANG, Jianwei WANG, Xinjian WANG

China Fire and Rescue Institute, Beijing, China; E-mail: 61188471@qq.com

Introduction:

How to scientifically, safely and standardly carry out various building fire response actions is still a major problem facing the national comprehensive fire rescue team. According to the salient characteristics of various building fire accidents, combined with the existing typical domestic building fire accidents, we can select or introduce the data model of the building ontology to simulate and construct the emergency response stage of various building fire accidents, and strive to construct The ontology model of the emergency response stage of building fire accidents improves the strategic preparations and combat measures for building fire accidents, so as to improve the combat strategy level of fire fighting and disaster relief troops in responding to various building fire accidents.

Purpose:

Use information extraction technology to automatically extract knowledge information from various building fire accident texts, refine and improve it under the ontology mode of building fire accident emergency management established by Wang Fang et al. A new ontology model for the emergency response phase of building fire accidents. Ultimately help the development of fire rescue.

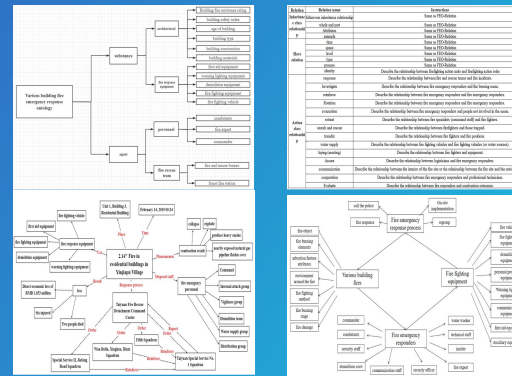
Methods:

Building fire emergency response

Ontology model:

1. Model building process
2. Building fire emergency response host body
3. Building fire emergency response ontology knowledge acquisition

VB-FERO-Ontology=<VB-FERO-Concepts, VB-FERO-Relations, VB-FERO- Functions, VB-FERO-Axioms,VB-FERO-Instances>



4. Ontology implementation

Conclusion:

The ontology technology is used to extract and sort out the knowledge of building fire accident texts, and form the ontology model in the process of building fire accident response. Based on the construction of the ontology model of building fire emergency response, the professional knowledge in the field of building fire emergency management can be integrated in a more reasonable way, the efficiency in the field of building fire emergency management can be effectively improved too. In order to improve the emergency response speed. It also laid a solid foundation for the automation and refinement construction of emergency management in China[16]. With the further development of research work, a more comprehensive building fire emergency response ontology will be built to assist the rapid formulation of disaster and accident plans and the decision-making of fire rescue teams.

References

- [1]Zhang Y L. Building the Emergency management system with Chinese characteristics in the new era: Based on the four-dimensional analysis framework of "Concept, Structure, Procedure and guarantee" -- and comment on The Innovation of China's Emergency Management System: Perspective of National Governance Modernization [J]. Journal of tianjin administrative college, 2022, 24 (02) : 44-54, DOI: 10.16326/j.jcarol carroll nki. 1008-7168.2022.02.005.
- [2]Zhao Zili. New Requirements and new development of Emergency management in China [J]. People's Forum,2019(02):58-59.
- [3]In Chinese with English abstract) Wei L J. Analysis on improving the ability of fire rescue team in the first battle [J]. Fire community (electronic version), 2022, 8 (6) : 43-45, DOI: 10.16859/j.jcarol carroll nki.cn12-9204/tu.2022.06.003.
- [4]Sun Chan Chang. Enhance the level of the new age of emergency management in China [J]. Journal of social governance, 2018 (05) : 11-15, DOI: 10.16775/j.jcarol carroll nki. 10-1285/d.2018.05.003.
- [5]Hong Xing. Evolution and current trend of emergency management in China [J]. Public administration and policy review,2018,7(06):11-20.
- [6]Kang Qingchun, Ma Baolei, Zhang Song. Discussed to build Chinese fire emergency rescue command system [J]. Chinese journal of safety science, 2010, 20 (02) : 64-68 + 181, DOI: 10.16265/j.jcarol carroll nki.issn1003-3033.2010.02.010.
- [7]Wang Wenjun, Meng Fankuo, Wang Yuelong, Luo Yingwei, Xu Zhaoqun. Research on Emergency Plan Based on Ontology [J]. Computer Engineering,2006(19):170-172.
- [8]Liu Zong-tian, Huang Mei-li, Zhou Wen, Zhong Zhao-man, Fu Jian-feng, Shan Jian-Fang. Computer science,2009,36(11):189-192-199.
- [9]Tu QIANG. Ontology construction of fire emergency management based on community [D]. Lanzhou University,2011.
- [10]Dai Yan. Ontology construction and reasoning research for industrial fire decision-making [D]. Wuhan University of Science and Technology,2013.
- [11]Wang Fang, Yang Jing, XU Lulu. Research on ontology construction for fire emergency management [J]. Journal of information science,2020,39(09):914-925.
- [12]Xu Guohu, Xu Fang. Library and Information Service,2006(01):44-48.
- [13]Hu Yan, Xu Xinglong. Unconventional emergency contingency plans on how to construct ontology model [J]. Value engineering, 2013, 32 (3) : 318-320, The DOI: 10.14018/j.jcarol carroll nki.cn13-1085/n. 2013.03.085.
- [14]Yang Jixing, SONG Chongyang, Jin Longzhe. Based on contingency plans ontology METHONTOLOGY law of building [J]. Journal of safety and environment, 2018, 17 (4) : 1427-1431. The DOI: 10.13637/j.jssn. 1009-6094.2018.04.033.
- [15]WangPeng. "code for fire protection design of buildings development review [J]. Journal of engineering construction standardization, 2020 (05) : 20-31, DOI: 10.13924/j.jcarol carroll nki.issn. 2020.05.004.
- [16]Li Ying, XI: Hongwei. Fire emergency decision-making model based on ontology [J]. Fire control & command control,2012,37(05):77-80.