

INDUSTRY -SPECIFIC INTELLIGENT FIRE MANAGEMEN SYSTEM

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1)Topic : Fire Safety Management in Transportation of Municipal Wastes with the Use of Geographic Information Systems

Author:A.A. Zakharova,A.V. Pak,O.P. Savoshinsky

Published:IEEE International Conference"Management of Municipal Waste as an Important Factor of Sustainable Urban Development" (WASTE)

Abstract:Fire safety management is one of the main tasks in the field of waste safety. The transportation of municipal waste is a complex management task that requires a highly skilled decision maker. The current management technique is based on the approach to the construction of systems based on the analysis, by assessing the set of initial factors, which does not allow to achieve the management goal. The proposed approach based on synthesis is devoid of this drawback. The application of the system is shown by the example of the use of geoinformation systems to the problem of fire safety in the transportation of municipal waste.

2)Topic: Analysis & Design of Fire Protection & Rescue Training Emulation System Based on Virtual Reality

Authors: Zhenhai Mu,Zhongxuan Tan

Published in:2017 international conference

Abstract:Virtual accident scenes in specific environments are simulated via the virtual reality technology. In the light of emergency rescue principles, trainees are allowed to mobilize and deploy emergency rescue forces, and work out

combat schemes to control the development and expansion of accidents. In addition, based on the tactical knowledge repository, the system carries out logical reasoning for combat schemes of trainees, and automatically generates intelligent aided judging results and result interpretations of relevant schemes. Virtual accident scenes are emulated dynamically at real time with the implementation of such combat schemes, thus creating a highly immersive training environment for trainees.

3)Topic: Building fire rescue with evacuation management information system and its application

Author: Xu Tao,Li Xin,Zhao Lin,Mao Guozhu

Published:2009 16th International Conference on Industrial Engineering and Engineering Management

Abstract:Building Fire Rescue with Evacuation Management Information System (BFREMIS) is established. And the evacuation model of BFREMIS was analyzed and presented in this paper. Based on the constructed network model, the evacuation of the teaching building in the university was analyzed by using the software EVACNET4. The analysis items included: the total evacuation time, the floor clear time, evacuation bottleneck, and the visual path of the evacuation on MAPGIS platform. BFREMIS is valuable in building safety assessment and building fire rescue.

4)Topic:Development of a Multi-Sensor Fire Detector Based On Machine Learning Models

Author:M. Nakıp and C. Güzeli

Published in: 2019 Innovations in Intelligent Systems and Applications Conference (ASYU)

Abstract:This study suggests a technique for reducing false positive fire alarms that combines data from several sensors with a particular machine learning model. In order to identify 7 physical sensory inputs, we create an electronic circuit using 6 sensors. In order to accomplish the fusion and classification of sensor data, we experimentally collect datasets for machine learning models that will be utilised for training and testing. An method is developed that uses

a trained machine learning model to classify sensor data before thresholding. Based on comparisons between multi-layer perceptrons, support vector machines, and radial basis function networks, machine learning models are chosen. Measures for comparison include classification accuracy percentage, false negative error, and false positive error.

5)Topic: High Resolution Weather Modeling for Improved Fire Management

Authors:K. Roe,C.McCord,D.stevens

Published :2001 ACM/IEEE Conference on Supercomputing

Abstract:A critical element to the accurate prediction of fire/weather behaviour is the knowledge of near-surface weather. Weather variables, such as wind, temperature, humidity and precipitation, make direct impacts on the practice of managing prescribed burns and fighting wild fires. State-of-the-art Numerical Weather Prediction (NWP), coupled with the use of high performance computing, now enable significantly improved short-term forecasting of near-surface weather at a 1-3 km grid resolution. This proof of concept project integrates two complementary model types to aid federal agencies in real-time management of fire. (1) A highly complex, full-physics mesoscale weather prediction model (MM5) which is applied in order to estimate the weather fields up to 72 hours in advance. (2) A diagnostic fire behavior model (FARSITE) takes the near-surface weather fields and computes the expected spread rate of a fire driven by wind, humidity, terrain, and fuels (i.e. vegetation).

6)Title:Fire-fighter: a decision support system for fire management

Author:K. F. Li and E. Miska

Published in:[1991] IEEE Pacific Rim Conference on Communications, Computers and Signal Processing Conference Proceedings

Abstract:A navy vessel's on-scene captain is assisted by a firefighter who is a smart assistant. Firefighters will create a fire management plan to put out the fire based on a ship's model, its configuration, contents, fire-fighting resources, and some fire-specific knowledge. The role of a firefighter relies on script-based planning. The concept of scripts is similar to that of contingency plans

for emergencies. The skeletal plan is instantiated using the data from the known situation. Planning, carrying out, and monitoring are interspersed by fire fighters to better respond to a changing environment. Firefighters will keep an eye on the implementation of the strategy to gauge the effectiveness of their emergency operations. Replanning will start when actions fail or seem to fail.

7)Title:Intelligent Community System Based on LonWorks Technology

Author:Y. Huang, C. Wan and Z. Zhou,

Published in: 2008 IEEE Pacific-Asia Workshop on Computational Intelligence and Industrial Application

Abstract:With the fast improvement of electronic innovation and PC innovation, the clever advancement of local area framework turns into a pattern. Shrewd people group is a wise, computerized, network and advantageous framework. It enjoys many benefits like expense saving and productive administration. In this paper, the plan of keen local area framework in view of LonWorks innovation is presented which centered around the particular technique for remote meter perusing and alarm observing. Simultaneously, the establishment in the LonWorks control organization of remote meter record framework in light of LonWorks innovation is made sense of. The plan of LonMaker network view is likewise presented. In the framework, GST200 alarm regulators are utilized. LonWorks innovation and GST transport innovation are coordinated from LonWorks Door. The plan of insightful hub and LonMaker control network are likewise depicted which in view of LonWorks innovation.

8)Title:Analysis & Design of Fire Protection & Rescue Training Emulation System Based on Virtual Reality

Author:Z. Mu and Z. Tan

Published in: 2017 International Conference on Robots & Intelligent System (ICRIS)

Abstract:The virtual reality technology simulates virtual accident situations in particular surroundings. The mobilisation and deployment of emergency

rescue forces as well as the preparation of combat plans to halt the spread and progression of incidents are permitted to trainees under the guidance of emergency rescue principles. Additionally, the system does logical reasoning for trainees' battle schemes based on the tactical information repository, and automatically creates intelligently assisted judging outcomes and result interpretations of pertinent schemes. With the use of such battle methods, virtual accident situations are dynamically simulated in real time, providing students with a highly engaging learning environment.

9)Topic:Intelligent indoor emergency evacuation systems: Reference architecture and data requirements

Author:J. W. S. Liu, F. T. Lin, E. T. H. Chu and J. . -L. Zhong

Published in: 2016 Future Technologies Conference (FTC)

Abstract:An intelligent indoor emergency evacuation system (IES) can respond to notifications from building safety systems warning of emergencies originating inside the building and from government agencies warning of natural catastrophes affecting the nearby areas by taking the proper risk reduction measures. In order to identify the data requirements for major public buildings, this article presents a data model, IES's reference architecture, and case studies. Widespread use of IES may face numerous technological and practical obstacles. Examples of these difficulties are provided, along with suggestions for overcoming them.

10)Topic:Prediction of Forest Fire Using Machine Learning

Algorithms: The Search for the Better Algorithm

Author:P. Rakshit et al.

Published in: 2021 6th International Conference on Innovative Technology in Intelligent System and Industrial Applications (CITISIA)

Abstract:The natural vegetation and forest life suffer from a number of damaging repercussions as a result of forest fires. Everyone's lives and the environment are significantly impacted by forest fires. Many ecosystems, including grasslands and temperate forests, depend heavily on forest fires. Optimizing the situation will be made easier with the capacity to anticipate the

potential forest fire's location. In the paper, a machine learning algorithm was used to predict the likelihood of forest fires using meteorological data. We can infer from the body of available research and its limitations that numerous studies have suggested various models for predicting forest fires and have quantified the quantity of scorched land caused by forest fires. However, there is no literature that makes predictions.