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RESEARCH ON THE SECURITY SYSTEM QUANTITATIVE RISK ASSESSMENT METHOD BASED ON EXPLOITATION GRAPH MODEL AND BAYESIAN NETWORK

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ABSTRACT

This article topics based on multi-feature fusion the Mean shift target tracking technology belongs to the field of intelligent video analysis, moving target tracking is interested in moving target location each image in a video sequence to find and acquire the target movement. Moving target tracking problem can be stated as interested in moving target movement prediction in the video sequence, feature extraction, feature matching and template update problem. In this paper, we consider using compressed domain features as a complement of the color features to extract the compressed domain features first need to understand the compressed domain detection technology. Detection based on the compressed domain, that is, in the case of not decoding or a small amount of decoding, directly on the compression characteristics of the image analysis, in order to achieve the detection of the image moving object.

Keywords: *Mean shift, Target tracking, Multi-feature fusion, Target recognition, Communication system*

1. INTRODUCTION

The topic-oriented Mean shift moving target tracking algorithm based on compressed domain features color feature fusion. The color characteristics of the image is one of the model of human visual perception target the most important information, color feature is difficult to change, by the target rotation, deformation, partial occlusion less impact on other characteristics, so using color characteristics of the target tracking has been tracking field research hotspot[1]. However, the use of color features to track general for brightly lit environments, tracking performance in dimly lit environment is not ideal. Similar color interference case only uses the color feature tracking is very easy to track the target of similar color or background, and lead tracking errors [2].

Most representative based color tracking algorithm is based on the color characteristics of the Mean shift algorithm, this algorithm uses color features as the main features of the match on the target color probability density function between the front and rear frame with a distance by several iterative search to converge to the position of the moving target in the next frame [3]. Traditional Mean shift tracking algorithm in bright simple scene, better tracking results, deformation, rotation, background is not sensitive to changes of the moving target, a certain robustness for target tracking in partial occlusion case, calculate the amount of not and other characteristics; However, in the case of similar color interference, occlusion of the target, the moving target size changes, as well as the speed of movement of the moving target too fast, Mean shift algorithm relying on a single color characteristics of the track still can not get a good tracking results[4]. This proposed color model, the improved algorithm, and can not obtain good tracking results. As can be seen, the root cause of the problem is a single color feature complex scenes does not sufficiently accurate to describe the change of the moving target, moving target description does not fully lead tracking defects. Solution to extract the characteristics of other types as a supplement, multi-feature fusion method to enhance the description of the moving target makes feature matching more accurate, in order to improve the overall tracking performance [5]. Therefore, how to make full use of the advantages of the color features, combined with other features, the use of multi-feature fusion technology for robust and efficient motion tracking is important research direction in the field of motion tracking [6].

In this paper, on the basis of the traditional Mean shift tracking algorithm based on color features, integration compressed domain features to improve the effect of target tracking. Specific work consists of two aspects: first, the compressed domain analysis, study how to effectively extract the compressed domain shape, texture, movement

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characteristics, moving target position, size, velocity forecast. Second, extract the compressed domain features, research new fusion method based on multi-feature compressed domain analysis, build compressed domain features based on color feature fusion Mean shift tracking model to solve the defects of the traditional Mean shift tracking algorithm.

2. RELATED WORK

In this respect, a small amount of literature deals with the genesis mechanism of certain specific public emergency, such as Feng Wenquan's research on the genesis mechanism of economic emergency, genesis of public safety and rural mass emergency, college emergency, and highway emergency. [7][8][9] Compared with emergency, there are much more literature about the evolution of disaster. Considering that some of public emergencies and disasters can be basically the same, the research on emergency evolution is to be introduced based on the current situation of research on disaster evolution. According to different discipline systems and different phases of evolution, research on disaster evolution can be classified as follows: according to discipline division, there are researches on disasters in the field of sociology and natural science, and the latter could be further divided according to different types of disasters. According to different stages, there are researches on disaster genesis and disaster diffusion. In the following part, the current situation of research on disaster genesis and disaster diffusion will be respectively explained based on discipline division.

Research of disaster in the field of sociology includes disaster management and relevant research. Research on disaster management mainly discusses disaster mitigation and precautionary management, and there is literature expounding the genesis of various types of disaster and their diffusion [10] [11]. She Lian and others [6] made research on the genesis of road traffic disasters, railway traffic disasters, water transportation disasters, civil aviation transportation disasters and proposed the idea and methods of establishing traffic disaster precautionary system. There is literature in which the effects of secondary disasters on the whole society are introduced from the perspective of the impacts of disasters [12]. The genesis of disasters is explored from the perspective of balance between social and natural system. Some scholars analyzed the impacts of natural disasters on specific social systems, for example, there is literature elaborating the genesis, characteristics, prone positions and influential factors of chemistry enterprises' secondary disasters after earthquake and submitting comprehensive defensive measures [13]. Still, some literature offered the theoretical framework for an industrial production system to make risk analysis of secondary disasters. They adopted the method of fault tree analysis to explore how to find various disaster-causing factors, and provide reference for the implementation of safety management.

In other literature the impacts of disasters on national economy is analyzed from the perspective of disaster economics [14] [15]. Literature in the field of domestic disaster sociology and disaster management shows that researches on disaster genesis have been carried out [16]. Wei Yiming and others discussed the complexity of disaster and proposed to use basic mathematical tools of complexity theory (fractal, chaos, neural networks and other nonlinear dynamics methods) to study and analyze the complex phenomenon of flood, establishing a Swarm-flood-based spatial and temporal evolution simulation platform, carrying out simulation case study of spatial and temporal evolution of flood, and obtaining certain law of spatial and temporal evolution of floods [17].

With regard to the evolution research of emergency, as early as 1975, based on their summary of the literature about disaster, Mileti and others proposed four phases of disaster life cycle [18], i.e. response, recovery, preparation and mitigation. After that, Park with others used the four stages and made research on the development process of the Chernobyl nuclear accident [19]. Based on the time series of disaster evolution, Stallings and Quarantelli studied the impacts before, during and after the disaster [20]. According to Thomas' systematic commentary on disaster, there is discussion about types and different stages of disaster in the past decade, but few of them involve the evolution and characteristics of public emergency. Typical evolution models of social emergency in foreign literature are summarized as follows:

(1). Turner's Model of Disaster Phases

On the basis of investigation on three disasters, Turner made description of disaster development according to the impact and consequences of disasters. In his model, the evolution process is divided into seven phases, i.e. event starting point in theory, the incubation phase, rapid phase, outbreak phase, rescue and assistance phase, social adjustment phase. In his view, evolution process of disaster generally passes the above cycle, disaster

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mitigation and measures are different in each phase. While Turner did not give in-depth analysis of pre-disaster phase, simply took disaster genesis as the event starting point in theory. In addition, the division of disaster stages in this model is mainly based on the human community's different response measures to disaster.

(2). Turner's Model of Pre-disaster Phase

Since there is no analysis of disaster genesis in Turner's phase model, in 1992, Turner built a pre-disaster phase model. In his view, at the pre-disaster phase, the interaction and coupling of a variety of incentives eventually lead to the outbreak of large-scale accident or disaster. In this model, case study analysis and qualitative methods are adopted to explore the genesis mechanism of public emergency.

(3). Ibrahim-Razi's Model

Ibrahim-Razi model derived from the investigation report of seven disasters in Malaysia from 1968 to 2002, and it further divided the pre-disaster phase into eight phases: 1) the error generated phase; 2) error accumulation phase; 3) Warning phase; 4) rectification or correction stage; 5) unsafe state phase; 6) induced events appearance phase; 7) protection and defense phase; 8) disaster outbreak phase. The model is based on the interaction mechanism of various factors within the organizational system, aiming at avoiding the outbreak of incident through analysis of interaction of various factors in disaster incubation period. The model also describes the domino effect of independent or interrelated dangerous organizations.

(4). Emergency Evolution Model

In 1995, according to the development process of humanitarian emergencies, Burkholder and others put forward the three-stage emergency model. The model divides emergency into three stages: acute emergency phase, late emergency phase and post-emergency phase. The model describes the state of different stages of emergency and they point out that different objectives must be set and different measures must be taken to quell an emergency according to stage characteristics of emergency.

(5). Crisis Phase Model

In 1986, Fink drew lessons from the disease development process and divided the crisis development into four phases: stimulating phase, acute phase, delayed phase, and resolution phase. According to him, it's most likely to prevent and intervene crises at the stimulating phase; crises at the acute phase are fast and highly destructive in characteristics; delayed phase refers to the stage where crises are alleviated and management personnel could carry out effective crisis management; and in resolution phase crises are completely resolved, which is the ultimate goal of crisis management.

In the area of emergency resource allocation, Toregas along with other people first proposed location set covering model, the objective of which is to determine the required minimum number of emergency service facilities and to configure these emergency service facilities so that all the demand locations can be covered. Church and ReVelle made the largest coverage model. In their model, they considered that because of the constraints of funding budget, it's difficult to cover all the demand locations, therefore, the location of facility P is determined to enable the maximum value (population or other indicators) of covered demand locations. Hogan and ReVelle used the concept of alternate coverage to modify the largest coverage model and put forward two alternative coverage models BACOP1 and BACOP2. Hakimi first considered from the aspect of "efficiency" of service facility and proposed P-Median Model, whose aim is to choose P facilities to realize the minimum total weighted distance between demand locations and P service facility.

From the aspect of "fairness" of service facilities, Hakimi raised P central issue, choosing P facilities to realize the minimum largest weighted distance between demand locations and service facilities. Cornuejols, Fisher and Nemhauserconducted a detailed classification and specific analysis on uncapacitated facility location problem (UFLP). Tseng Kuo-hsiung from Taiwan University studied the problems in the distribution of relief material and proposed the establishment of "emergency supplies distribution center" through reasonable siting, which could significantly improve the distribution efficiency of relief supplies and improve the responsiveness of the rescue.

Barbarosoglu studied resource layout problems in Turkey earthquake. Karl F. Doerner studied two regions of the port city of Galle in southwestern Sri Lanka, where the location and layout of school and other public security facilities take into account the risk of tsunami inundation. Chang studied resource placement problems at different levels in the context of the floods in Taipei. Under the condition that the fire location is known and the city's total amount of fire control resource is limited, Jia Chuan-Liang established the fire control resource layout model during multi-stage process of extinguishing the fire. Sun Ying gives mixed

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integer programming model in resource layout of highway emergency management. Jing Jia studied the revised model of emergency medical services (EMS) facility location system on the occurrence multi-point large-scale emergency. Song Yuantao established a limited ambulance location model with double covering standards.

In the area of emergency resource scheduling, Resource scheduling is defined as the follows: on the occurrence of unexpected events, based on the command and dispatch system's instructions, and the current demand for aid resources, corresponding departments identify the emergency service facility location and the volume of resources, constitute resource transportation routes and multi-stage schedule resources in accordance with changes of events.

Linet and others studied the emergency logistics scheme at natural disasters, established resource scheduling model for various modes of transport and offered algorithms and numerical examples. AliHaghani and others describes emergency resource transportation scheduling as time windows limited multi-object, multi-model network flow problem. The study assumes that the goods and vehicles can fully meet the needs, and the goal is to minimize transportation costs, and the author gives two kinds of solution method. FiedriCh and others offer optimal planning model after earthquake: Under the condition of limited time, resource quantity and quality, quality of rescue could be improved through the efficient use of resources, achieving the smallest number of deaths and allocating and transporting resource to a number of disaster-stricken areas.

Konstaninos et al studied road network incident response model based on the timely decision support system, with the goal to make the shortest response time. Jae Young hoi studied how to allocate limited resources (such as ambulances and other emergency response vehicles) and transport the injured to hospital in the case of uncertainty of road network, aiming at the largest number of survivors. He Jianmin, Liu Chun-lin discussed the multi-depot combinatorial optimization problem from a non-path angle and in two cases. They used fuzzy optimization method to examine the multi-depot vehicle scheduling problem in restricted period, and gave out a compromising scheme in meeting the conditions of the earliest starting time and the least number of rescue points. Dai Gengxin and others studied emergency scheduling problem of multi-resource combination, and established multi-resource combination model; based on the knowledge of correlation, Gao Shuping et al [46] studied multi-resource emergency systems scheduling and established a more realistic stochastic model.

In summary, foreign scholars' studies on evolution of public emergencies focus on the social-technical disasters and accidents areas, few studies involve natural disasters and emergency evolution. They generally divide incident evolution phases from the perspective of disaster sociology, security management, and international relationship and on the basis of human social systems, and take different measures based on specific phase characteristics of public emergency.

3. CHARACTERISTIC PARAMETER EXTRACTION ALGORITHM BASED ON COMPRESSED DOMAIN ANALYSIS

For a standard MPEG4 compression algorithm, a comprehensive analysis of the compressed domain parameters generated in the encoding process, such as: macro-block motion vectors, DCT coefficients, etc., size, contour, the direction of movement, speed, texture and other characteristic parameter extracting compressed domain moving target[7]. This article focuses on global motion and stationary surveillance video background environment, moving target detection and tracking. The extracted motion vector field, they can use the information contained in the motion vector field for the detection and tracking of moving targets. Firstly, the motion vector de-noising, densification, and the local area of the background removal process, according to the direction of the motion vector coding results and statistical estimation motion target motion area, moving direction, moving speed, and the like. Moving regions identified by the motion vector and a moving target for the outline of the moving target, and finally through the region growing, making the compressed domain detection results more in line with the goal of true sports results

Therefore, it is necessary first of all non-zero motion vector in the scene de-noising the de-noising threshold method, the scene is less than a certain threshold, the motion vector filtering some noise vector information, so that can be filtered, but may also filter out some useful vector information. Therefore, the need to combine the characteristics of motion vectors for motion vector and noise de-noising appropriate algorithm. In this paper, eight neighborhood Judgments Act macro block motion vector the consistency judgment to remove the noise of the motion vector field. Eight

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neighborhoods defined as shown in the figure, marked as "0" means the center macro block is marked as "1" to "8" for the macro block of the eight neighborhood macro block in Figure.1

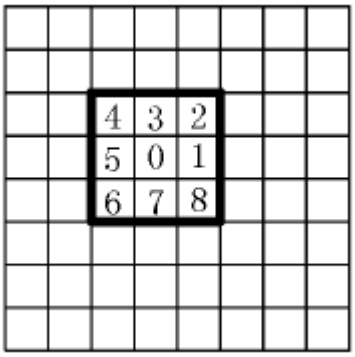

Figure 1: 8 Field Macro Block

The main idea of the method is the frame in any of a macro-block has a non-zero motion vector, determines the motion vector of its eight surrounding neighborhood macro block with similarity, i.e., the amplitude A and the angle of the motion vector between the macro block the magnitude of the difference, if it is exceeded a certain range, it is considered the center macro block the motion vector is inconsistent with the motion vectors of surrounding macro blocks belonging to the motion vector field noise. De-noising results is in Figure.2:

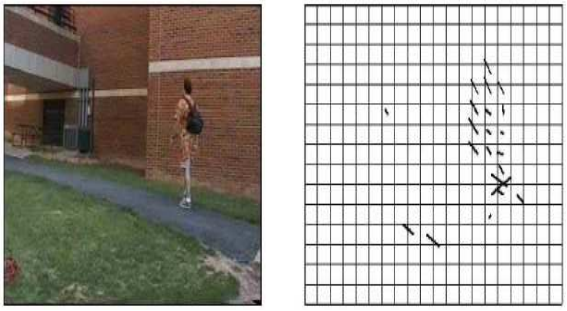

Figure2: Motion Vector De-Noising Diagram

Traditional nuclear fixed window width Mean-Shift tracking algorithm can not be good for effective tracking of the gradual change in the size of the target. In this paper, according to the motion vector clustering analysis, access to scale the size of the estimated value of the moving target, and the target size estimate as the Mean shift motion tracking algorithm nuclear window wide dynamic update factor (tracking window) size, design reasonable nuclear window The wide-scale automatic update algorithm.

Given the tracking window T, assume $\{X_i\}_{i=1,\ldots n}$ pixel coordinates of its center as the origin, T contains nuclear histogram of the image $P=\{p_i\}_{i=1,\ldots m}$,defined as

$$p_u(y)=C\sum_{i=1}^{n}k\left(\left\|\frac{X_i}{h}\right\|^2\right)\delta[b(x_i)-u]$$

The bandwidth of the kernel function is a very important parameter Mean shift algorithm, but the Mean shift algorithm without adaptive adjustment mechanism of the kernel function bandwidth. The graphics shown in Figure.3 is a graph of the Gaussian kernel. Function in the x, y axis from 0 to 35 within the area has a value beyond the value of 0, the core function of the bandwidth can be set to 17.5. Tracking window that contains the target generally choose this area, or slightly less than it. Dimensions of the target trace if there is a greater change, the target window should also changes accordingly.

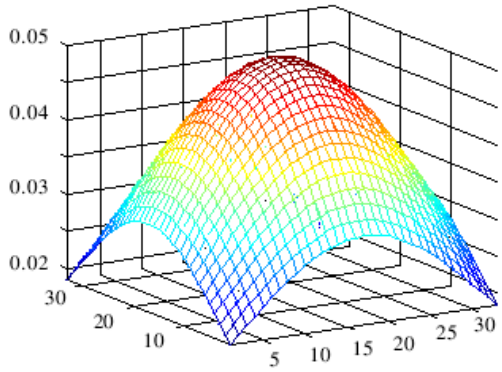

Figure3: Gaussian Kernel Bandwidth Schematic Diagram

4. MEAN SHIFT FAST MOVING TARGET TRACKING ALGORITHM

The direction of the motion vector encoding: as shown in Figure.4, the direction angle of the motion vector range is divided into eight intervals (0-7 interval), quantized coefficients. The angle between the vertical component and the horizontal component of the motion vector is the direction angle of the motion vector, can be obtained, which interval belonging to the direction angle, and can be generated in the direction of this interval encoding. The direction is encoded as:

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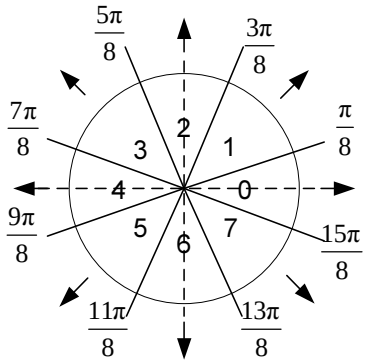

Figure4: Direction Of Motion Vector Encoding Diagram

5. ESTABLISHMENT OF EMERGENCY RESOURCE ALLOCATION MODEL

According to statistics of disaster emergency supplies from government departments over the years, the year's total amount of emergency demand is configured with the help of grey predication model. Map of research is as follows:

(1). establish the origin data sequence according to emergency supply sample data over the years:

$$x^{(0)} = [x^{(0)}(1), x^{(0)}(2), ...x^{(0)}(n)] \quad (1)$$

(2). the preceding origin data sequence is processed for r-order accumulation, making the following data sequence:

$$x^{(l)} = [x^{(l)}(1), x^{(l)}(2), ...x^{(l)}(n)] \quad (2)$$

Where: $x^{(l)}(k) = x^{(0)}(1) + x^{(0)}(2) + ... + x^{(0)}(k)$

$$x^{(l)}(1) = x^{(0)}(1)$$

(3). establish a whitening nonlinear differential equation of first order

$$\frac{dx^{(l)}}{dt} + ax^{(l)} = u \quad (3)$$

(4). the value of a, u expressed in matrix form can be obtained through the application of least-squares method and maximum principle:

$$\hat{a} = \begin{bmatrix} a \\ u \end{bmatrix} = (B^T B)^{-1} B^T Y_N \quad (4)$$

Where: $Y_N = [x^{(0)}(2), x^{(0)}(3), ...x^{(0)}(n)]$

$$B = \begin{bmatrix} -\frac{1}{2}[x^{(1)}(1) + x^{(1)}(2)], 1 \\ -\frac{1}{2}[x^{(1)}(2) + x^{(1)}(3)], 1 \\ ..... \\ -\frac{1}{2}[x^{(1)}(n-1) + x^{(1)}(n), 1 \end{bmatrix}$$

After B is obtained, seek B^T and $(B^T B)^{-1}$

(5). seek the solution of whitening differential equations, namely the time corresponding function is as follows:

$$\hat{x}^{(1)}(t+1) = [x^{(0)}(1) - \frac{u}{a}]e^{-at} + \frac{u}{a} \quad (5)$$

Discrete response function is as follows:

$$\hat{x}^{(1)}(k+1) = [x^{(0)}(1) - \frac{u}{a}]e^{-at} + \frac{u}{a} \quad (6)$$

(6). A regressive for the generated model, the original sequence prediction results can be reverted

$$\hat{x}^{(0)}(k) = [\hat{x}^{(1)}(k) - \hat{x}^{(1)}(k-1)] \quad (7)$$

According to multi-objective-based single emergency location resource scheduling model, considering the uncertainty of resource demand in multi-stage emergency scheduling process, the corresponding model is established and simulated. Map of research is as follows:

Suppose there is one single emergency location (denoted as A), and the emergency response process requires n phases, the resource demand for phase j is (j=1,2….n), there are m(m>1) emergency rescuing locations, the total amount of emergency response supply offered by emergency rescuing location i at phase j to emergency location is (i=1,2⋯.m)，the consumption of response capacity of emergency supplies is v (non - uniform),the demanded time for emergency supply to be delivered from rescuing location to emergency location is >0，suppose (The time needed from the same rescuing location to emergency location at every stage is the same). Considering the constraints of "how to make an emergency response the earliest time" and "the least number of rescuing locations" at every stage of emergency response process, a non-uniform multi-constraint multi-stage mathematical model is as follows:

$$\min \sum_{j=1}^{n} z_i^j, \min S_j \quad (8)$$

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The earliest emergency response time forms a set $C_{s_j} \neq \phi$

$$\text{S.T} \qquad z_i^j(z_i^j - 1) = 0 \quad , \quad \sum_{i=1}^{m} x_{ij} \geq x_j \quad ,$$

$$\sum_{j=1}^{n} x_{ij} \geq \int_0^{t_j} f_j(t)dt \quad (i=1, 2,\ldots.m; j=1, 2,\ldots..n)$$

Among them, binary decision variable z_i^j corresponds whether rescuing location i is involved in stage j, the value is $\{0, 1\}$. When rescuing location i is involved in the emergency response action of stage j, $z_i^j = 1$, otherwise $z_i^j = 0$. The consumption rate of emergency resource is v=f(t), $\int_0^{t_j} f_j(t)dt$ is the consumed resource amount at the moment of t_i in stage j of an emergency response. The constraint $\sum_{i=1}^{m} x_{ij} \geq x_j$ means the total amount of emergency resource offered to emergency location at stage j is greater than or equal to the total demand of resource at stage j.

6. CONCLUSION

This article intends to conduct in-depth research, the purpose of Mean shift tracking algorithm and compressed domain motion parameters analysis based on compressed domain motion parameters analysis to achieve a Mean shift tracking algorithm, and build an efficient, practical target tracking system. The topic for the first time raised the compressed domain features combined with color features multi-feature fusion technology. At the same time without increasing the complexity of the algorithm significantly improve robustness based on the color Mean shift tracking algorithm. Some research significance. Through this study, the presence of a single color feature tracking problem to be solved, and further improve the classic Mean shift algorithm tracking accuracy and efficiency, expand the use only of the idea of multiple pixel domain feature fusion, is expected to achieve the compressed domain feature fusion the pixel domain characteristics of the target tracking technology breakthroughs proposed compressed domain features and the color of the pixel-domain characteristics of fusion tracking framework has important theoretical value.

Through the establishment of the evolution model, scientific and objective description is made for social unconventional emergency, and the response capability of security precaution system is assessed through concern-degree-based assessment approach. The response capability values of security precaution system are provided at different concern degrees as decision references for the country's efficient, orderly and scientific response to social unconventional emergency.

Unconventional social emergencies not only bring disasters to human life and living environment, but also cause damage to country and human. They also tend to cause a chain of reactions and inspire a lot of social problems, thus are likely to break the equilibrium of society and lead to national instability and social disharmony.

To solve the problem of emergency resource allocation and scheduling under unconventional social emergencies, in this paper, a model based on grey prediction is proposed in emergency resource allocation, which optimizes the year's total amount of emergency resource in a comprehensive way. However, the model is only established through mathematical time and "the least number of rescuing locations" are solved. However, in the paper there is a limit in description and expression of changing events and process, and the mutual problems of "how to make an emergency response the earliest transformation of events and processes of multiple space time needs to be further explored.

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REFRENCES:

[1] D. COMANICIU, P. MEER. Mean shift analysis and application [J]. Proceedings of the Seventh IEEE International Conference Computer Vision 1999: 2: 1197-1203.

[2] Yilmaz A, Shafique K, Shah M. Target tracking in airborne forward looking infrared imagery. Int'l Journal of Image and Vision Computing, 2003, 21(7):623−635.

[3] Comaniciu D,Ramesh V,Meer P.The variable bandwidth mean shift and data-driven scale selection[A].8thIntl Conf on Computer Vision[C].2001,1:438-445.

[4] Comaniciu D, Meer P.Mean shift: A robust application toward feature space analysis [J].IEEE Trans on Pattern Analysis and Machine Intelligence, 2002, 24(5):603-619.

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

[5] Peng NingSong, Yang Jie, eta. Automatic Selection of Kernel-Bandwidth for Mean-Shift Object Tracking [J]. Journal of Software，2005，16（9）：1542~1550.

[6] Shi Ying Adaptive feature-spatial representation for mean-shift tracker. Proceedings - International Conference on Image Processing, ICIP. 2008, 2008, pp: 2012-2015.

[7] Li Peihua. An adaptive binning color model for mean shift tracking. IEEE Transactions on Circuits and Systems for Video Technology, September 2008, pp: 1293-1299.

[8] Tang Wei-Qin, Chen Rong-Qiu, Zhang Yin. Study on Path Optimization of Emergency Material Transportation with Interval Time. 4th International Conference on Wireless Communication, Networking and Mobile Computing, 2008. pp: 1-4

[9] Zhu Xiao-ning, Du, Wen. Study on the Mode of Social Emergency Early Warning Management Based on Grid. International Conference on Management Science and Engineering 2007. pp:2463-2468

[10] Mou Zhenhua, Li Meiling, Liu Yongjun Study on Emergency Traffic Organization of Urban Road Traffic System under Abnormal State. International Conference on Management and Service Science 2009. pp:1-4

[11] Tang Hong, Zhao Lindu. Knowledge Management System of Intercity Emergency Decision Making World Congress on Software Engineering 2009. pp: 365-369

[12] Lili Rong，Xiaona Jia. A systematic study on emergency policy document for quick response. IEEE International Conferecne on System, Man and Cybernetics. 2008. pp: 856-861

[13] Xin Ye, Junfeng Ma, Hui Li. 6th International Conference on Service System and Service Management 2009 pp: 540-545

[14] Liudu Zhao, Li Sun. Emergency service modes of supply chains with replenishment sources. International Conference on Service System and Service Management 2008. pp:1-7

[15] Kai Yu Qingquan Wang, Lili Rong. Emergency Ontology construction in emergency decision support system. IEEE International Conference on Service Operations and Logistics, and inforatics. 2008. pp:801-805

[16] Wenbiao Peng, Chaojun Yan. Emergency Command System for Geologic Disasters Prevention. Fifth International Conference on Information Assurance and Security 2009. pp:410-413

[17] Yang Qing, Wang Zhan. All-Round Emergency Managment of Public Incidents. International Conference on Service Science Management, and Enigeering. 2009. pp:522-525

[18] Yang Peng. Wang Wenjun. Application of Emergency Case Ontology Model in Earthquake. International Conference on Management and Service Science 2009. pp: 1-5

[19] Wang Xinlei, Shen Chen. A New Scheme for Power System Emergency Control Based on the OBDD Search Method. International Conference on Power System Technology 2006. pp:1-5

[20] Leonard M. Emergency operationas procedures development and training. IEEE Thirteenth Symposuim on Fusion Engineering 1989. pp:1492-1494

[21] Dai Geng Xing, Da Qing Li. Research on Multi-mix of resources for emergency Scheduling Problem. The Journal of Systems Engineering Theory and Practice. 2000, (9): 52-55

[22] Gao Shu Ping, Liu San Yang. Connection number-based emergency system of multi-resource scheduling problem. The Journal of Systems Engineering Theory and Practice. 2003(6): 113-115