

Change Detection Trend Prediction of Leisure Agriculture and Rural Tourism Based on High-Resolution Remote Sensing Image Classification Algorithm

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Abstract: Domain adaptation algorithms for source and target remote sensing images from the same region are studied. Remote sensing images in the same area are often less different and have strong correlations. This paper analyzes the ideas of getting rich in leisure agriculture and rural tourism under the development of the rural revitalization strategy, and proposes ways to revitalize the countryside and boost the economy, such as accelerating agricultural vocational education and changing the thinking of rural population management. A distance-based local support vector machine algorithm (DLSVM) is proposed. The algorithm compares the distance between the unlabeled sample and the hyperplane with a preset distance threshold. The ultimate goal of implementing the rural revitalization strategy is to continuously improve the participation and benefit of rural residents in industrial development, and completely solve rural problems. Industry and peasant employment issues.

Keywords: Change Detection Trend Prediction, Leisure Agriculture and Rural Tourism, High Resolution Remote, Remote Sensing Image Classification

1. INTRODUCTION

Change detection and trend prediction of leisure agriculture and rural tourism based on high-resolution remote sensing image classification algorithm [1]. The development of leisure agriculture and rural tourism is a major measure to expand agricultural functions in urban suburbs and realize the integrated development of urban and rural areas. In recent years, my country's leisure agriculture and rural tourism have developed vigorously [2]. Driven by market pull, policy promotion, and innovation, the scale of the industry has expanded rapidly, and its driving ability has become increasingly strong. It has become a sunrise industry for wealthy farmers [3], improving agriculture, and beautifying rural areas. In recent years, leisure agriculture and rural tourism have gradually demonstrated the advantages of their sunrise industries. Not only have their scales expanded, but they have also driven other industries due to the promotion of markets and policies [4].

The acquisition of high-resolution ground images is also becoming easier [5]. However, the continuous improvement of spatial resolution and temporal resolution also increases the number of remote sensing images exponentially [6], which brings more and more severe challenges to the processing of remote sensing images. Classical change detection techniques use a single pixel as their basic unit of analysis (pixel-based change detection) [7]. There are different pixel-based change detection techniques, including post-classification, image difference, change vector analysis, principal component analysis [8]. This is the first 10 years of the development of leisure industry and rural tourism in my country. These 10 years are the budding period of the development of this industry [9]. Due to the recent reform and opening up, the development system of leisure industry and rural tourism is not perfect [10].

Proposed by Brailovsky et al. in 1999, by adding two multipliers to the kernel function of the traditional support

vector machine [11], it has locality. However, the local support vector machine with multipliers calculates the distance in the sample space, so the performance of the algorithm varies greatly for different data sets [12]. In VHR images, the salt-and-pepper effect will be caused due to the same spectrum of foreign matter and different spectrum of homogenous matter [13]. Another important limitation of classical pixel-level based methods for change detection is the difficulty in modeling contextual information. In recent years, high-performance computing systems and efficient [14] software algorithms have facilitated segmentation and feature extraction of multispectral and multiscale remote sensing images. At present [15], crop identification and classification methods for high-resolution images are mainly divided into pixel-based and object-oriented classification. Traditional pixel-based crop classification methods usually perform supervised [16] classification based on the spectral information of image pixels. Domain adaptation algorithms based on deep learning can be mainly divided into two categories [17].

One is to adapt the source and target domains by reducing the domain disparity loss by combining the loss function and the dissimilarity measure between the two domains. Among them [18], the more representative early algorithms are the domain adaptive neural network and deep domain obfuscation proposed in 2014. With the acceleration of urbanization, the convenience of cities is gradually improving [19], and the overall shape is also changing towards "modernization". In the hearts of many people, the traces of "rural" in the city have almost completely disappeared, and childhood memories can only be found in Find one or two in rural areas [20]. At this stage, the pace of urbanization in my country has accelerated, the economic income of residents has increased, and the consumption structure has begun to change. After solving the problem of food and clothing, urban residents have needs for sightseeing, leisure and tourism [21].

Some rural areas and peasant households close to large and medium cities take advantage of the unique local agricultural resources and environment and characteristic [22] agricultural products. In the second 10 years of leisure industry and rural tourism development, the pace of industrial development has gradually accelerated, because this period happened to be a period of rapid urbanization in my country [23], the consumption structure has undergone earth-shaking changes, and the society has developed rapidly [24].

2. THE PROPOSED METHODOLOGY

2.1 The Change Detection Trend Prediction of Rural Tourism

Finally, the classification results were appropriately revised based on the ground sampling survey information, and the overall classification accuracy reached 95.3%. Liu Bin used the support vector machine method to extract the crop information of rice [25], corn, soybean, potato, flax, wheat and other crops in the study area based on the visible light band information of high-resolution images of UAVs. In the multi-temporal application scenario, the algorithm in this paper aims at that in a set of multi-temporal data, only one image contains some manually labeled labels, and the domain adaptation algorithm is used to generate the classification results of the remaining temporal phases according to the relative order of time.

The algorithm framework in this section mainly utilizes the correlation between temporal phases, and the sample category distributions of two images that are closer in time are more likely to be similar. There is a certain difference between leisure agricultural tourism and traditional cultural tourism, that is, the difference between "actual participation" and "sightseeing experience". According to the conventional tourism mode, tourists focus on enjoying the scenery and understanding the cultural customs of a specific area, in order to increase their experience. It marks that the competent government departments have begun to intervene, actively promote the formulation of leisure agriculture standards and system construction, strengthen government services, optimize the policy environment, and guide the healthy development of the industry.

Through the statistical analysis of the classification results of 4 high-resolution remote sensing images by SVM, it is found that the distribution of wrong samples is close to the hyperplane, and the sample points at these positions are correct if the local support vector machine algorithm KNSVM is used for classification. higher rate. Object-based change detection methods can subdivide an image into meaningful uniform regions based on spectral properties, shape, texture, size, and topology, then organize them into image objects, and further classify objects into changed and unchanged kind.

2.2 The High Resolution Remote Sensing Image Classification Algorithm

At this stage, the development of leisure agriculture and rural tourism in the country is flourishing and splendid, and the whole industry shows a good momentum of rapid development. This is the third decade of the development of leisure industry and rural tourism, and this period is also the growth period for the development of this industry. In the past 10 years, people's living standards have improved to a higher level. From solving the problem of food and clothing to moving towards a well-off society, the quality of life has been significantly improved. Therefore, people's needs for leisure

travel are more urgent. Table 1 summarizes the classification accuracy of SVM for two types of samples whose distance from the hyperplane is less than 1 and whose distance from the hyperplane is greater than 1. It can be seen from the table that the classification accuracy of samples whose distance from the hyperplane is greater than 1 is much greater than that of samples whose distance is less than 1. However, since objects have different sizes and shapes, the results of change detection largely depend on the accuracy of segmentation.

Another challenge of object-based change detection is the requirement to choose an appropriate threshold. The results show that the recognition effect of crop classification mainly depends on the accuracy of the plot boundary, which provides a reference for using the surface unit as the classification object. Given the ever-increasing number of high-resolution spaceborne sensors, multi-view images of the same area are easier to obtain. Using dense matching techniques, it is possible to generate digital surface models with single-pixel resolution. For my country's tourism industry, leisure agricultural tourism can be regarded as a supplement to the traditional tourism model, thereby effectively diverting tourists from holidays.

Therefore, the rural tourism model based on leisure agriculture. With the increase of residents' income, the increase of leisure time, the change of lifestyle, the aggravation of urban diseases, and the call of nostalgia in the prosperous age, my country's leisure agriculture and rural tourism consumption are strong. The development of rural and leisure tourism is an indispensable trend in the future. For the development of leisure agriculture and rural tourism, the government has paid great attention to it and also gave policy support.

2.3 The Leisure Agriculture and Changes in Rural Tourism

In order to further illustrate the distribution of misclassified samples, we count the number of samples in different intervals of the distance of the wrong samples from the hyperplane, as shown in Figure 1, the abscissa represents the distance from the hyperplane. This method neatly avoids separating changed classes from unchanged classes by choosing a threshold, which is often a critical issue in many existing methods. The object-oriented classification method can use the surface object as the classification unit, through the comprehensive detection and extraction of the spectral, spatial, texture and other feature information of the target object and the correlation between the neighboring objects, and based on the fuzzy classification principle, the same classification obtained by the segmentation is analyzed.

The implementation of the rural revitalization strategy requires a lot of human and material resources. In a short period of time, through administrative intervention, it is highly feasible to transfer some talents from the cities to the countryside to help the aborigines in rural areas sort out the elements related to leisure agriculture and rural tourism. People from all over the world excavate the local regional culture, national culture, historical culture, etc., and use the text to cast the soul, use the scenery to paint the soul, and use the emotion to describe the soul. Moving nostalgia, develop and launch a large number of leisure experience products with distinctive features.

3. CONCLUSIONS

This paper proposes an automatic change detection method by combining multi-resolution level set evolution and SVM

classification. The samples are then selected to train the SVM classifier by improving the level set model and applying it to pixel-level change detection. To ensure that the people in rural areas live in a long-term living state of "steady income increase, living and working in peace and contentment". In the process of working towards this goal, farmers should change their own thinking, develop leisure agriculture and rural tourism, and learn to adapt to local conditions, highlight their characteristics, and do a good job of overall planning.

4. REFERENCES

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