**LITERATURE SURVEY**

# **1. Research on Recommendation of Insurance Products Based on Random Forest**

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With the rapid development of recommendation systems, how to predict user's behavior accurately becomes more and more important. In this paper, random forest is applied to recommend insurance products and compared with ID3, C4.5, Naive-Bayes and Nearest-neighbor. Experiment results show that the prediction error of random forest is 2.02% lower than ID3, 1.09% lower than C4.5, 1.67% lower than Naive-Bayes and 5.97% lower than Nearest-neighbor. Therefore, it is highly feasible to recommend insurance products with random forests.

**2. Clustering Analysis for Silent Telecom Customers Based on K-means++**

**Authors : Y. Qiu, P. Chen, Z. Lin, Y. Yang, L. Zeng and Y. Fan**

Silent customers are part of customers that company is very easy to lose. It is necessary to analyze the features of such customers and make appropriate market decisions to improve the enterprise's revenue in the telecom industry. This paper proposes a K-means++ method for customer segmentation based on silent customers. Firstly, key variables to the segmentation model were screened out and then the original data was preprocessed. Secondly, silent customers were clustered and the Calinski-Harabasz index was adopted to verify the best clustering effect when k=6.At last, radar chart analysis and suggestions were given, which would provide data supports to the improvement of operation and maintenance management and decision-making of the precision marketing.

# **3. Research on Pedestrian Attitude Detection Algorithm from the Perspective of Machine Learning**

**Authors : Kailun Wan**

In the rapid development of science and technology today, the intelligence of the visual system has been highly valued. The recognition and detection of pedestrian attitudes in a complex environment have become the application trend of intelligent video. The widely used camera machine does not have such a function. Therefore, this article deeply discusses the relevant algorithms of pedestrian gesture detection and recognition based on machine learning. The traditional HOG feature detection can only achieve the relevant detection of the upright walking crowd target. While when the pedestrian makes different gestures, its detection effect is directly affected and challenging to be recognized. So, this article uses the checking methods of the deformable part model (DPM) to check the target pedestrian gesture and elaborate pedestrian's attitude estimation algorithm for the deformable parts principle. Finally, it combines the algorithm with HOG+SVM principles to simulate with the MATLAB and gets the experimental results to show that this approach can make a pedestrian posture test implemented to achieve high precision accuracy.

**4.** **Prediction of Daily Smoking Behavior Based on Decision Tree Machine Learning Algorithm**

**Authors : Y. Zhang, J. Liu, Z. Zhang and J. Huang**

With the accumulation of smoking data and the development of the algorithm, precise analysis becomes possible and this can benefit smoking cessation a lot. However, as far as we know, little research has been done on the behavior of everyday smoking, such as the precise time when a smoker smokes. This paper proposes a model based on a decision tree machine learning algorithm to predict daily smoking time. The simulation data set of smoking time data was established by using the population information of smokers collected by the Chinese center for disease control and prevention. In order to solve the problem of too little feature information, we propose a feature information extraction module. In this paper, we tested a variety of machine learning algorithms, and finally came to the conclusion that the prediction model based on XGBoost had the best performance, with an accuracy rate of 84.11%, and its training was much faster than that based on other machine learning algorithms.

**5. Video-based Human Action Recognition using Deep Learning**

**Authors : Hieu H. Pham, Louahdi Khoudour, Alain Crouzil, Pablo Zegers, and Sergio A. Velastin**

Human action recognition is an important application domain in computer vision. Its primary aim is to accurately describe human actions and their interactions from a previously unseen data sequence acquired by sensors. The ability to recognize, understand and predict complex human actions enables the construction of many important applications such as intelligent surveillance systems, human-computer interfaces, health care, security and military applications. In recent years, deep learning has been given particular attention by the computer vision community. This paper presents an overview of the current state-of-the-art in action recognition using video analysis with deep learning techniques. We present the most important deep learning models for recognizing human actions, analyze them to provide the current progress of deep learning algorithms applied to solve human action recognition problems in realistic videos highlighting their advantages and disadvantages. Based on the quantitative analysis using recognition accuracies reported in the literature, our study identifies state-of-the-art deep architectures in action recognition and then provides current trends and open problems for future works in this filed.

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